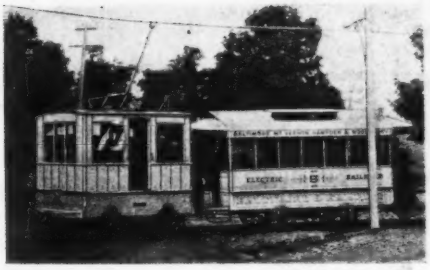
# PAPER TRADE JOURNAL

VOL. 123, NO. 3 JULY 18, 1946

L I B R A R Y
CURRENT SERIAL RECORD
JUL 25 1946
U.S. DEPARTMENT OF AGRICULTURE

60th YEAR
1886—1946



**In 1886 . . .**

The first electric street railway in the United States had been opened just a few months before, in Baltimore. Its advent was heralded far and wide.

Great events and small—Paper records them all, ably serving on the one hand education and democracy; and on the other, the infinite needs of commerce and industry.

Like transportation, the Pulp and Paper Industry has developed phenomenally in the past six decades, and it has been a privilege to have participated in that growth.

**GOTTESMAN & COMPANY**
— INCORPORATED —

**WOOD PULP**

**22 EAST 40th STREET • NEW YORK 16, N. Y.**
**EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden**

Canada's Stabilization Brings $73.80 Newsprint
Crown Zellerbach's Sales Running at Peak
Doyle Reports Surge in Union Bag Sales
Hoosiers Hope to Avoid Inflation
U. S. Envelope Plant Running at Full Capacity
Cuneo Interests Acquire D. M. Bare Mill
Cellulose to Expand Baldwinsville Plant
Newsprint Output Jumped in June

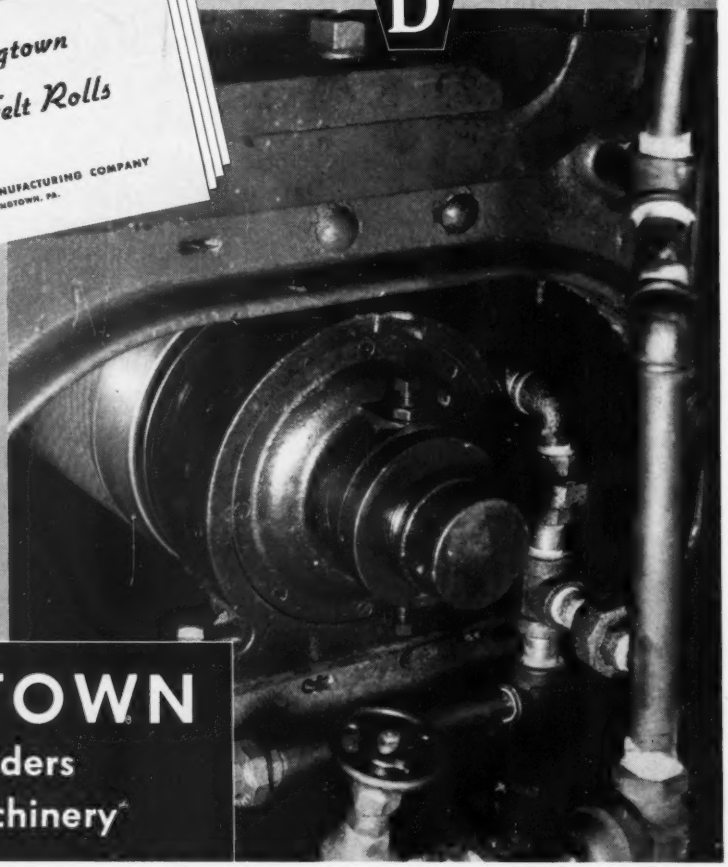
# Over 200 Suction Felt Rolls

## Used on Paper and Board Machines

Installations of Downingtown Suction Felt Rolls at various positions on Fourdrinier and Cylinder Machines show 20% to 100% increase in felt life, depending on the condition of the machine parts and the class of stock being handled. These rolls continuously keep the full width of the felt clean and open at all times. Photo below shows an installation on a fourdrinier making book.

**DOWNINGTOWN MFG. CO.**
**DOWNINGTOWN, PA.**

*New Catalog. Write For It Today*

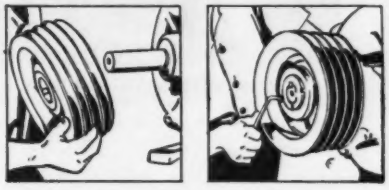



**DOWNINGTOWN**
Designers & Builders
Paper Making Machinery

# SET THE RIGHT Speed FOR PEAK Production

(ABOVE) TEXROPE Wide-Range Vari-Pitch sheave and V-belts give flexible speed range of almost 2 to 1 on this roving frame in a textile mill. Installation is simple, low in cost. Speed adjustments are easily and quickly made.

## "MAGIC-GRIP" SHEAVE



### GOES ON EASY . . . GRIPS TIGHT

Patented "Magic-Grip" sheave comes completely assembled. You simply slip it on the shaft (there's easy clearance for even over-size shafts) then tighten three cap screws. Sheave is locked on with a powerful clamp fit — yet it can be removed just as easily. No hammering to damage motor bearings — no filing or reaming. And, no wobble, weave or backlash.

## *TEXROPE Variable-Speed Drives Give Speed Flexibility at Low Cost*

ON MILLS, machine tools, blowers, pumps — wherever changes in speed will add to operating efficiency, output or economy — get the speed flexibility you need with low-cost constant-speed motors and Texrope Variable Speed Drives. There are types to meet all requirements: Vari-Pitch sheaves, for stationary and motion control, Wide-Range Vari-Pitch drives and Speed-Changers.

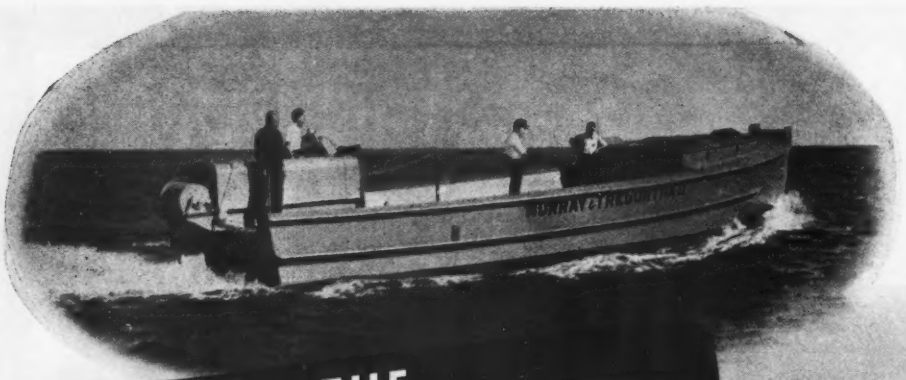
**COMPLETE V-BELT SERVICE:** Your Allis-Chalmers dealer or district office offers TEXROPE "Super-7" V-Belts in five types, all lengths and sections; TEXSTEEL, TEXDRIVE and "Magic-Grip" Sheaves. It's a COMPLETE line of V-Belt equipment, engineered by Allis-Chalmers, originator of the multiple V-Belt Drive. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

A 2084

**ALLIS-CHALMERS**

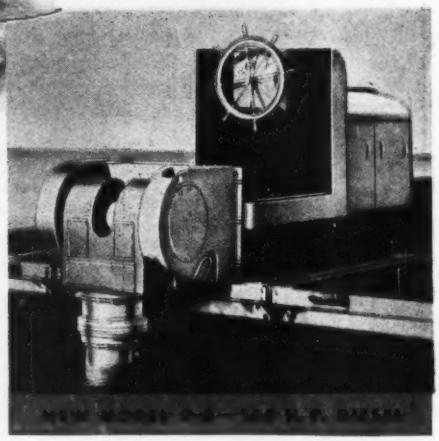
One of the Big 3 in Electric Power Equipment — Biggest of All in Range of Industrial Products

**TEXROPE V-BELT DRIVES**



Illustrated: workboat 46' long, equipped with 110 H. P. "Harbormaster"

# THE HARBORMASTER WORKBOAT



***Designed and constructed*** for all types of marine operations in shallow and deep water... delivers 100% efficiency of the all-around features of the "Harbormaster". Here is the most maneuverable workboat in any field... spins on its own axis by means of the exclusive patented 360° Propeller Thrust Steering Control. Here, at last, is the acme of maintenance efficiency... service and repair on the spot (Exclusive 180° Elevating Mechanism elevates entire submerged assembly out of water within easy reach).

Yes, the "Harbormaster" workboat can do your marine work better. Write today for complete details of ***all*** "Harbormaster" workboats using various models ranging from 20 H. P. to 330 H. P., diesel or gasoline. Remember, the "Harbormaster" ***delivers more thrust per horsepower in continuous heavy-duty performance*** than any other conventional propelling and steering equipment!

## MURRAY & TREGURTHA, INC.

*High Fidelity Marine Engines since 1885*

60 HANCOCK STREET, QUINCY 71, MASS., U. S. A.

MATHEWSON MACHINE WORKS, INC. — Manufacturing Affiliate

SHERBROOKE MACHINERIES, LTD., SHERBROOKE, QUEBEC — Licensed Mfr. and Distributor for Canada

# PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.
Established 1872

Volume 123 Number 3

*Published Every Thursday by Lockwood Trade Journal Co., Inc.*

*Executive and Editorial Offices:*
*15 W. 47th St., New York 19, New York*

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OXFORD TRADING AKTIEBOLAGET, *Bibliotekgatan 6-8, Stockholm, Sweden.*

*Subscriptions: (Payable in advance)* By the year $4.00; Single Copy 10 cents.
*Postage Extra: To Canada $2.00; To Other Foreign Countries $3.50.*
Member Audit Bureau of Circulations.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL *Feb. 19, 1926.*

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PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*
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# CONTENTS

**JULY 18, 1946**


Canadian Dollar Stabilization Brings Newsprint to $73.80 ..... 19
Midwest Expects Price Changes ..... 19
Cuneo Interests Acquire D. M. Bare Mill ..... 19
Wisconsin Sees Forestry Trend Back to Private Ownership ..... 20
Forest League Seeks Better Protection ..... 20
Doyle Reports Surge in Union Bag Sales ..... 22
Masonite Reassigns Its Key Personnel ..... 22
Newsprint Output Jumps in June ..... 24
As a Paper Mill Man Views Wreckage in Austria ..... 30
Insulation Board Institute Proposes Revisions ..... 34
Personal Products Presents Model Wadded Crepe Plant 36
Dutch Paper Mills Need Machinery ..... 38

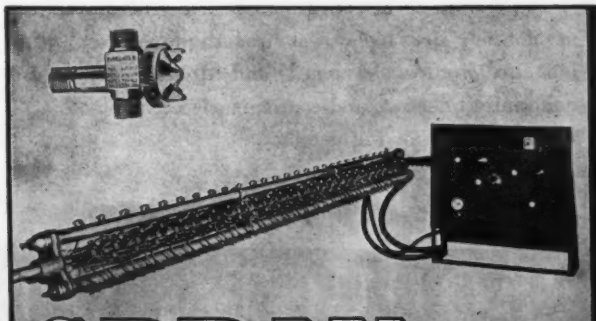
Financial News ..... 26
Imports ..... 64
Market Review ..... 66
Editorial ..... 48
Production Report ... 49
Miscellaneous Markets. 68
Market Quotations ... 68
Classified Advertising.. 72

**Technical Section *("TAPPI")***

A Modern Continuous Beating and Refining System .. 51
Instrumentation in Pulp and Paper Mills ..... 56


**PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX**

INDEX TO ADVERTISERS ON PAGE 86

SPRACO BATTERY SPRAY MOISTENING EQUIPMENT

For the application of moisture in the form of coarse spray, fine spray or mist of uniform density across any desired width of web, with controls for varying the amount of moisture sprayed, at the same time maintaining uniform distribution.

WRITE FOR NEW TECHNICAL BULLETIN

SPRAY ENGINEERING CO. 118 CENTRAL STREET SOMERVILLE 45, MASS.

# WHERE WET STRENGTH COUNTS—

## —count on UFORMITES 467 and 470!

No need to tell you that food wrapping papers must have superior wet strength. For this and many other applications, the UFORMITES will impart that wet strength efficiently and economically.

UFORMITE 467 is particularly designed for use with Kraft by beater addition. UFORMITE 470 is recommended especially for sulfite stocks but can be used effectively with Kraft, rag and groundwood—in stocks where low acidity is important.

Both of these urea formaldehyde resins can be easily added to your present processes—require no major changes in your operating procedure. No pretreatment or special handling is necessary. As little as 1% resin solids on dry fibre weight will increase wet strength to 20-30% of the dry strength!

You'll want to investigate these resins. Their use not only gives higher wet strength properties, but also improves dry tensile and Mullen, fold, uniformity of sizing, and coating surface characteristics. Write for full details.

UFORMITE *is a trade-mark, Reg. U. S. Pat. Off.*

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*WASHINGTON SQUARE, PHILADELPHIA 5, PA.*

# WORTH REMEMBERING!...

## CRANE Supplies all Piping Materials

**ONE**
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY

It's well worth remembering and using now—the service that simplifies all your piping jobs from plan to installation. And the one that assures uniform dependability in every part of piping systems.

**For example, on this compressor installation,** look what it means to have the Crane line for your partner:

—All valves and fittings, pipe, accessories, and fabricated piping units are specified from a single source.
—One order to your Crane Branch or Wholesaler gets them all.
—Undivided responsibility for materials speeds the job. Crane quality throughout guards against untimely breakdowns of piping, and excessive upkeep.

In brass, iron, and steel equipment, Crane gives you the world's most complete selection. There's no limit on your taking advantage of this Crane service. Think it over—now! CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill.
*Branches and Wholesalers Serving All Industrial Areas.*

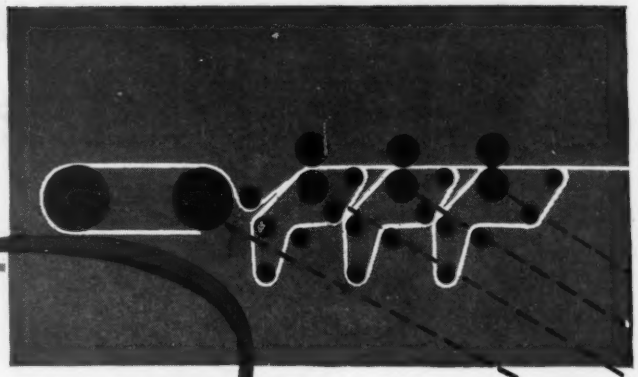
(*Right*) **GREATER ADAPTABILITY** *for more services—Crane Standard Iron Body Wedge Gate Valves. Improved body design reduces weight yet increases strength. Straight-through ports assure streamlined flow. All parts developed to give dependable, durable service. For steam pressures up to 125 pounds; 200 pounds cold. Patterns for every need. See Crane Catalog, page 101.*

EVERYTHING FROM . . .
VALVES • FITTINGS
PIPE • PLUMBING
HEATING • PUMPS

# CRANE

FOR EVERY PIPING SYSTEM

New



# MULTIPLE-GENERATOR SECTIONAL DRIVE

...helps you maintain higher running speeds,

...reduce spoilage losses,

...increase production

Here's the newest development in sectional paper-machine drives, designed by G.E. to help you boost output and reduce costs. It's a multiple-generator sectional drive and it's *simple to install, simple to operate,* and *simple to maintain.* Thanks to more than five years of war-accelerated development in the design and application of electronics and amplidynes, G.E. now brings you smooth, constant paper speed and tension control at less cost. Your machines can operate at higher running speeds—you can reduce spoilage losses—you can increase your output.

## Easy to install

The controls for each section of a G-E multiple-generator drive system are separately "packaged" in modern panels and completely assembled in our factory. They require no extensive adjustments or checking of interlocking circuits.

Power and control wiring is much simpler than that used in older drives because no intricate controls are needed for interlocking relays with other section-control panels.

## Easy to operate

You can start several section drives simultaneously, each drive coming up to a preset speed quickly and smoothly. Load or draw changes in any one section do not disturb adjustments in other sections.

Draw adjustments for any single section are easily obtained by means of a small rheostat. Slack take-up is easily accomplished without affecting draw adjustments. Response to speed and load changes is so fast that over-correction, unavoidable with slower mechanical regulators, is eliminated.

## Easy to maintain

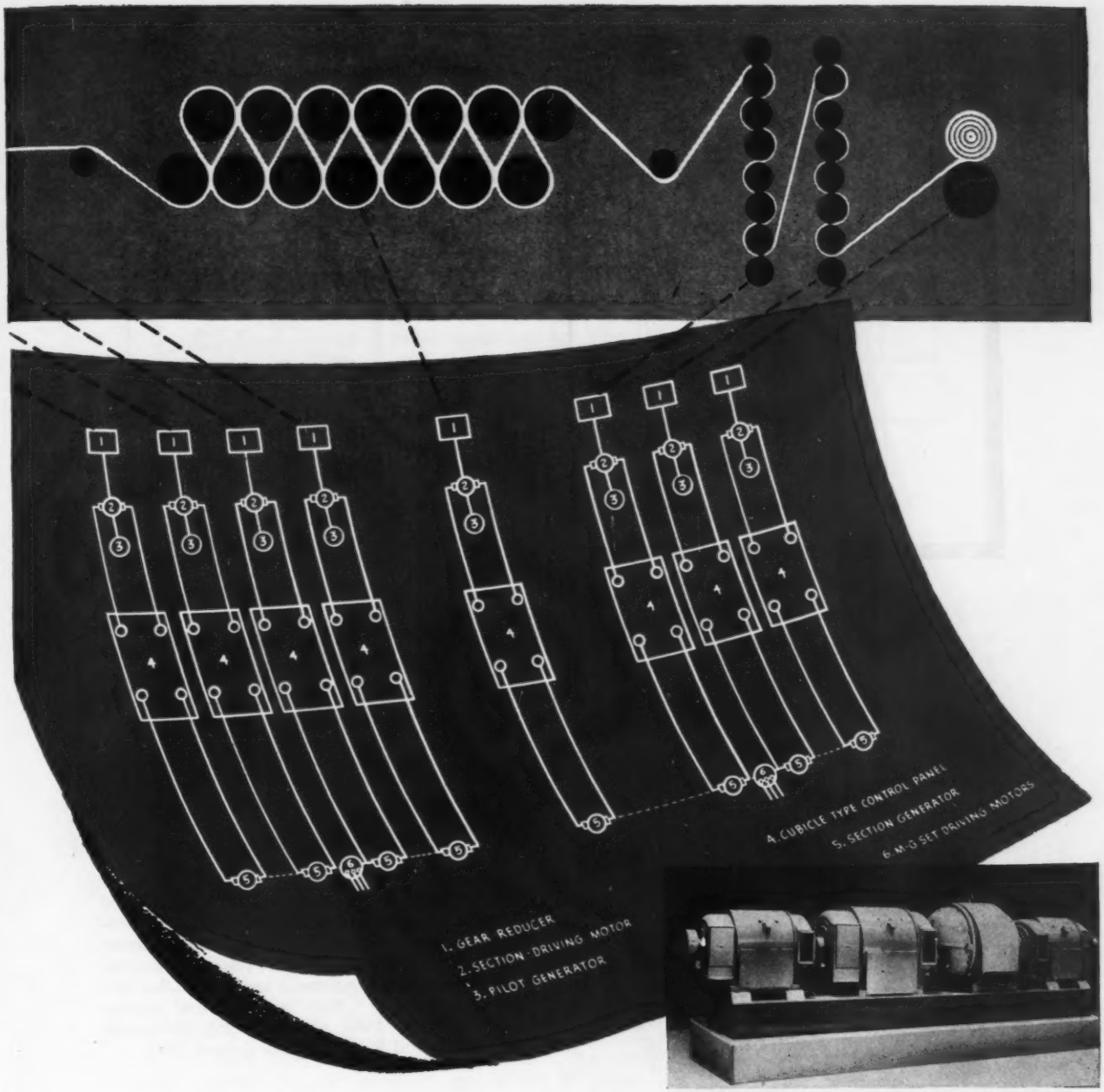
All wiring and control devices in a G-E multiple-generator drive are incorporated in simple, dead-front cubicles, all of which have identical contents and arrangements except for minor differences necessitated by varying ampere ratings.

The electronic speed regulator requires little inspection and maintenance for there are no gears, cone pulleys, or other mechanical devices to get out of order. Replacements are limited largely to standard inexpensive electronic tubes.

"Down time" for wash-up, inspection and maintenance of the paper machine itself is greatly reduced because each section drive can be jogged or operated at slow speed simultaneously with or independently of other sections.

First to build a multiple-generator sectional drive for paper machines, G.E. continues to pioneer in the design and engineering of efficient, low-cost paper-mill drives. Other improved drives have already been developed for chippers, grinders, stock-preparation machines, super-calenders, and winders. Why not consult your nearest G-E sales engineer now while your plans are still in the formative stage? *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

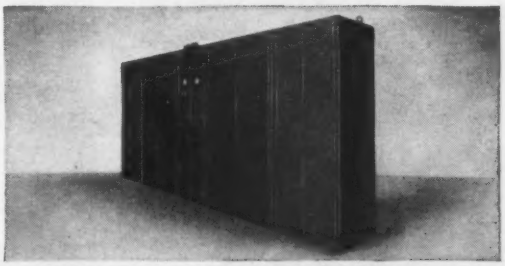
PAPER-MILL Drives






**G-E MULTIPLE-UNIT MOTOR-GENERATOR SETS** *are sturdy, give long, reliable service and require no more than routine maintenance check-up.*

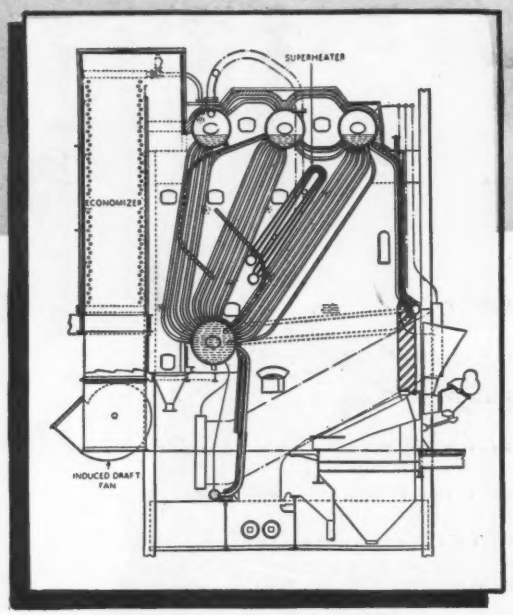
**In a G-E multiple-generator sectional drive,** the drive for each section is, in effect, a complete and independent system. Each section motor is powered by its own adjustable-voltage generator whose output voltage is varied to give precise control of the speed of each section. There is no connection between individual section controls except for a stable reference voltage feeding the electronic-pre-amplifier in each control panel. The multiple-generator system permits an adjustable-voltage drive to perform to its best advantage by operating only on generator voltage control without change in motor-field excitation, thereby giving full motor-torque efficiency under all operating conditions.



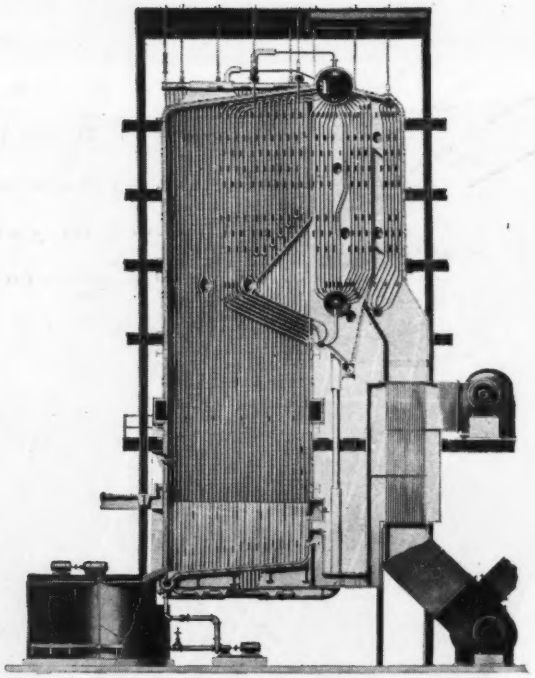
**THE MULTIPLE-GENERATOR CONTROL PANELS** *are steel enclosed in dead-front cubicles that protect personnel and equipment, yet are easy to inspect. They can be installed individually or in groups.*

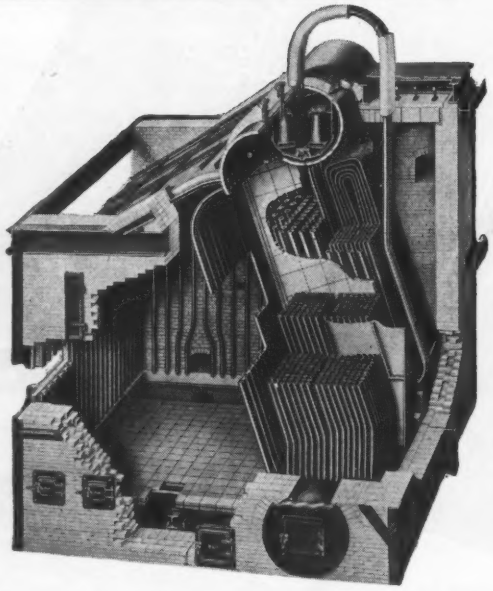
GENERAL ELECTRIC

663-24-137



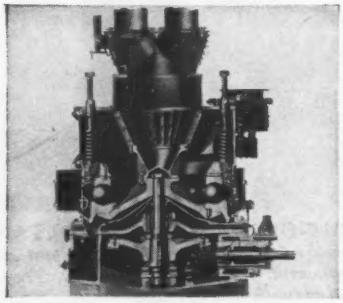

**RECOVERY UNITS. High chemical recovery and reduction, dependable steam generation and ability to handle wide variations in black liquor concentrations are obtained at low operating cost in sulphate paper mills with B&W-Tomlinson Recovery Units.**



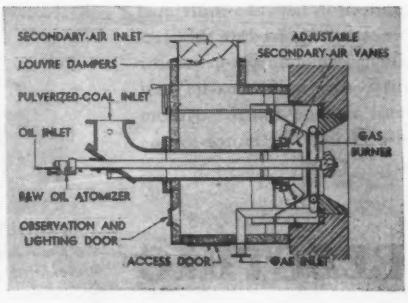


**BOILERS. The complete line of B&W boilers and related equipment meets all paper mill requirements for dependable, low-cost steam generation in any combination of capacity, pressure, temperature, fuel, and space conditions. Particularly popular B&W boilers for power and process steam in Paper Mills are the Integral-Furnace Boiler (left) and Stirling Boiler (upper left).**

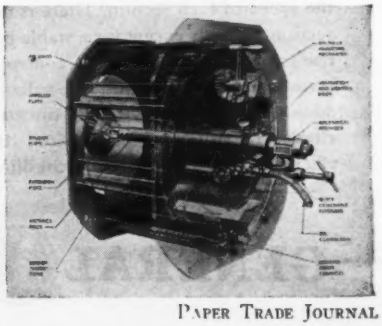
**PULVERIZERS. For pulverized-coal firing of power boilers B&W Pulverizers offer many installation, operating, and maintenance advantages.**



**MULTIFUEL CIRCULAR BURNER. Pulverized coal, oil, and gas are efficiently burned singly or in any combination with this burner, thus allowing a wide latitude in use of available fuels.**




**OIL BURNERS. B&W Oil Burners effect rapid and complete combustion at all rates of fuel feed, using mechanical, steam, or steam-mechanical atomizers.**

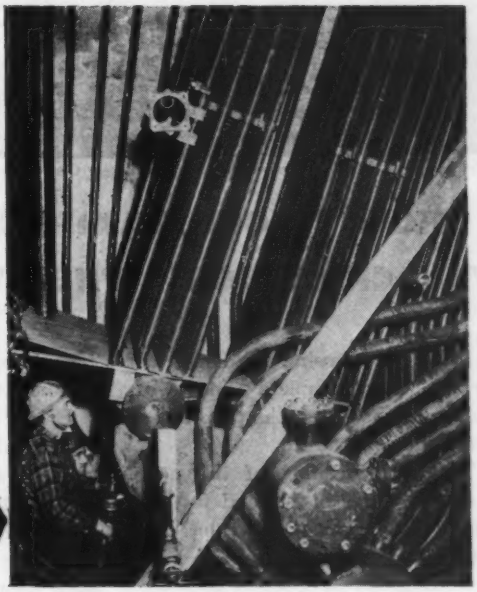


# B&W EQUIPMENT for PAPER MILLS...

IN building all the types of equipment shown on these pages, B&W approaches each specific paper mill requirement with an over-all knowledge of both design and application. B&W's broad familiarity with the paper industry for over 60 years pays dividends to mill operators in terms of continuity of service, operating efficiency, and greatest return on investment wherever B&W equipment is used. Consult our nearest office for prompt cooperation in the modernizing of existing plants or in planning for future development.

**PRESSURE VESSELS.** Sizes and shapes of dependable welded construction for any paper mill requirement can be fabricated by B&W from carbon, alloy, or clad steels. All vessels are x-ray inspected and stress relieved. The seven 30-ft. Pulp-Digester tanks shown above were designed for a working pressure of 150 psi.

**TUBES.** Seamless and Welded Pressure Tubes are made by B&W in a full range of analyses from low carbons to high alloy steels, including stainless steels, for any high-temperature, high-pressure application in paper mill equipment.



Water-Tube Boilers, for Stationary Power Plants, for Marine Service . . . Water-Cooled Furnaces . . . Superheaters . . . Economizers . . . Air Heaters . . . Pulverized-Coal Equipment . . . Chain-Grate Stokers . . . Oil, Gas and Multifuel Burners . . . Seamless and Welded Tubes and Pipe . . . Refractories . . . Process Equipment.

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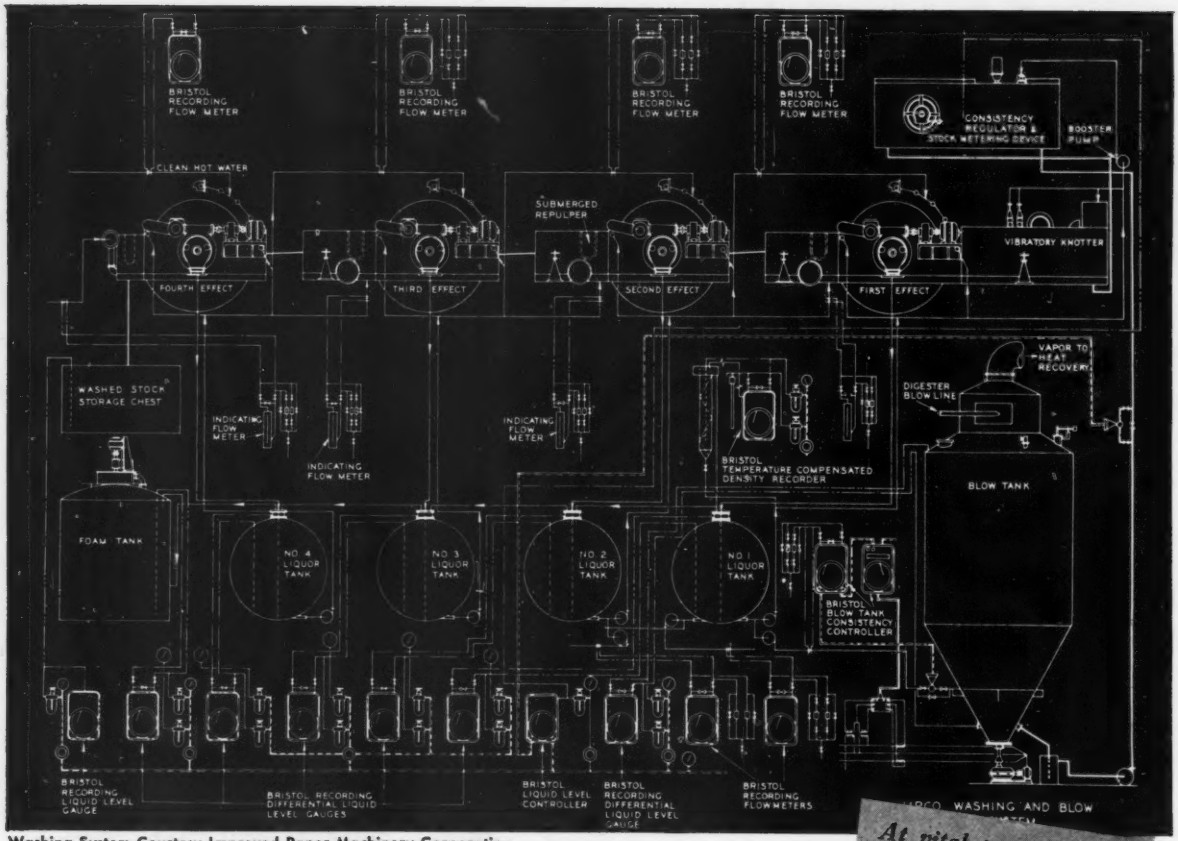



Washing System Courtesy Improved Paper Machinery Corporation

*At vital points, Bristol instruments record and control the flow through this modern system of stock washing.*

# HOW TO GET MAXIMUM RECOVERY OF "BLACK LIQUOR" WHEN WASHING KRAFT

In the processing of Kraft or Brown stock, complete removal of "black liquor" from the pulp fibres is of vital importance.

Thorough washing of the pulp with hot water is required to produce a pulp of acceptable color. Yet the amount of water must be kept to a minimum in order to keep the liquor strength up. The material balance of both liquid and pulp must, therefore, be maintained within close tolerances.

An effective solution to the problem is found in the accompanying diagrammed process. Note that Bristol equipment plays a major part in maintaining the necessary balances throughout this system.

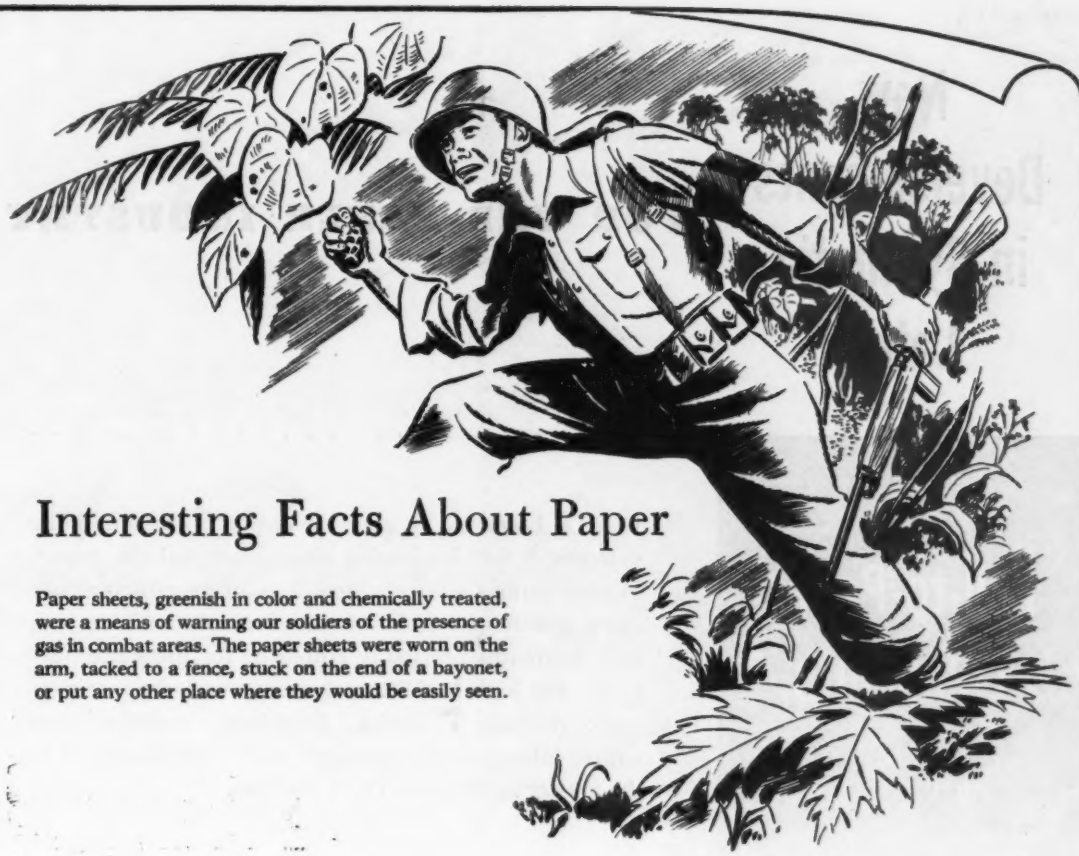
Bristol Flow Meters enable positive regulation of the dilution factor. The saving in evaporation heat pays for their cost many times over. Bristol Liquid Level Gauges tell when the lowering of the level in a tank means that some part of the system is being starved, calling for adjustment. A Bristol Consistency Controller on the blow tank assures proper dilution and dispersion of the fibres, while other Bristol Instruments have important functions.

Here, in a single system, is striking evidence of Bristol's wide-ranging usefulness in modern process control. For further information, write for literature. Address THE BRISTOL COMPANY, 148 Bristol Road, Waterbury 91, Conn. (The Bristol Co. of Canada, Ltd., Toronto, Ont., Bristol's Instrument Company, Ltd., London, N.W. 10, England.) West Coast: Branch Factory — 40 Berry St., San Francisco 7, Calif., Branch Office — White Bldg., Seattle 1, Washington. Lake Region: *Branch Factory and Office* — 351 East Ohio St., Chicago 11, Ill., Southern States: *Branch Office*— Comer Building, Birmingham 3, Alabama.

BRISTOL

*Engineers process control for better products and profits*

**AUTOMATIC CONTROLLING AND RECORDING INSTRUMENTS**



# Interesting Facts About Paper

Paper sheets, greenish in color and chemically treated, were a means of warning our soldiers of the presence of gas in combat areas. The paper sheets were worn on the arm, tacked to a fence, stuck on the end of a bayonet, or put any other place where they would be easily seen.

# • Interesting Facts About Helmerco Blues

Helmerco Blues comprise an interesting group of tinting pigments known to papermakers everywhere for the blue-white perfection they bring to white bond, writing, book, ledger and other papers at minimum color cost.

Helmerco Blues are excellent performers in any furnish and are dependably uniform. Added directly to the beater, Helmerco Blues disperse rapidly, giving a broad range of quality white shades with good light fastness and excellent brightness. Fine light blues in the same group of papers can also be produced with Helmerco Blues, as well as fast-to-light specialty shades.

Consult your Heller & Merz representative for complete information on Helmerco Blues.

**Heller & Merz Department**

**CALCO CHEMICAL DIVISION · AMERICAN CYANAMID COMPANY**

**BOUND BROOK, NEW JERSEY**

**New York · Chicago · Philadelphia · Boston · Charlotte · Providence**

Calco

# New Developments in Synthetic Latex

## FOR THE PAPER INDUSTRY

### Foil-to-Paper Laminants

General Latex has recently developed a synthetic latex compound for laminating aluminum foil to paper. Water-resistant and possessed of excellent adhesive and aging qualities, its moderate cost offers substantial savings over laminants previously employed for the same purpose. For high MVTR packages — food, drugs, cigarettes; reflector insulation, household insulation, box wraps, labels, display mounts, etc. — this laminant is the answer to the converter's problem.

### Saturants for High-Bulk Papers

This synthetic rubber latex compound and its derivatives, custombuilt to your individual requirements, are adaptable to all products which use high-bulk papers as a basic material. Manufacturers of imitation leather, and similar flexible materials for luggage, belts, bookbinding materials, shoe trimmings, etc., will find these "tried and proven" saturants highly satisfactory for the impregnation of their synthetic materials. Our large technical staff and extensive laboratory facilities are always available to help you in developing the best compound for your particular material.

**General Latex & CHEMICAL CORP.**

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**Vultex Division — Verdun Industrial Buildings, Verdun, Montreal, Quebec**

Agents for Rubber Reserve Company for storage and distribution of natural rubber latex.
Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co.

# Attention, Mills!

## Look ahead...

## ...Keep ahead with...

## The La Boiteaux COMPANY

The La Boiteaux Company has given new significance to these words by broadening and intensifying its services to the paper and paperboard industries.

In addition to our leadership as distributors of box board, paper and paperboard specialties, we offer a complete coast-to-coast sales network, *plus* a world-wide outlet thru our export department.

Irrespective of the tonnage or grades you produce . . . you can profit through the continued use of La Boiteaux sales assistance and distribution. Today, more than ever before, it's essential to "Look Ahead . . . Keep Ahead . . . with The La Boiteaux Company."

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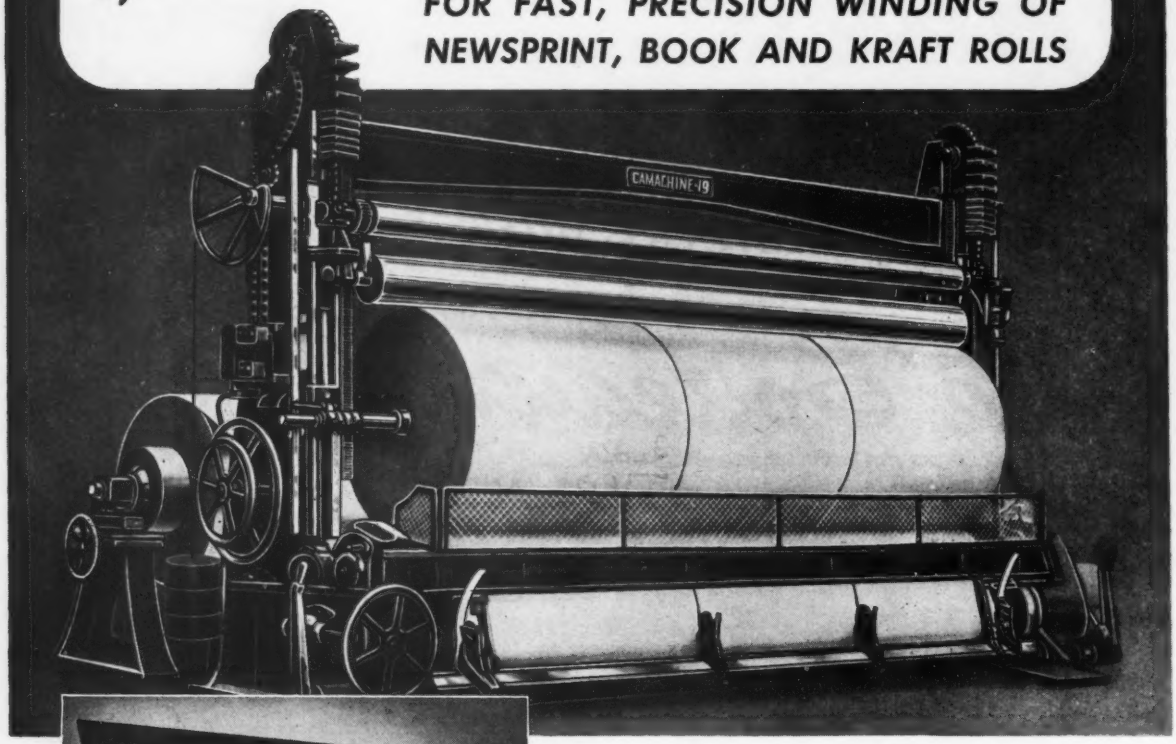
# CAMACHINE 19

## FOR FAST, PRECISION WINDING OF NEWSPRINT, BOOK AND KRAFT ROLLS



CAMACHINE 19 is a fast winder for newsprint, book and kraft mills, handling webs from 117" to 192" in width. It operates smoothly at speeds up to 2800 F.P.M. Rolls produced on CAMACHINE 19 are of a high quality —uniformly wound, without wrinkles, cleancut with straight ends and uniformly set cores. Rolls of this kind stand up better in shipment. Further than this, they actually reduce shipping costs because they contain more paper per roll and make it possible to ship a greater tonnage per carload.

Rolls wound on CAMACHINE 19 can be counted on to reach the customer's plant in good condition. They are in the best possible shape for further processing. News rolls, for instance, unwind smoothly without breaks at the highest speeds at which the presses may operate.

The sound features of design and the high quality of construction incorporated in CAMACHINE 19 are the result of the concentration of experience and effort of our organization chiefly on one objective—the production of the best roll-winding and slitting machines.

# GET FACTS!

## WRITE FOR THIS FOLDER

**CAMERON MACHINE COMPANY** · 61 POPLAR STREET BROOKLYN 2, N. Y.

MIDWEST OFFICE: 111 W. MONROE ST., CHICAGO 3, ILL.

# SO FAR–AND NO FARTHER

Penetration of printing ink oils and waxes can be perfectly controlled by KELGIN, the modern algin surface sizing agent. It provides a smooth, dense surface and guarantees bright, clear color values . . . insures a faultless printing surface for gloss ink printing.

KELGIN does not cause foaming—picking—sticking to the rolls. It is perfectly suited to waterbox application in the calender stacks . . . is soluble in both hot and cold water. KELGIN is quickly, easily applied—and it is surprisingly inexpensive.

KELGIN is a product of Nature, processed under rigid specifications to produce a consistently uniform result. It will fit your most exacting formula requirements. Our Technical Staff will gladly assist you in your surface sizing problems. Just drop us a line.

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(NEWS ITEM: *Paper yarn is replacing jute in the manufacture of rug-backing.*)

Rug-backing yarn, made of Kraft paper with high wet strength, is being used instead of jute on a large percentage of domestic rugs. It is unusually smooth, lies flat and sheds water. This new paper yarn prolongs the life of carpet pile and keeps rugs new-looking longer.

Paper bags for vacuum cleaners . . . paper tape to record sound . . . paper cans for frozen foods . . . New uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines.

Among the new machines under construction by Puseyjones are three of the largest and fastest Fourdrinier Machines, one for book and high grade printing, one for white paper for bags, and one for Kraft liner board; also one Cylinder machine of record size and speed for the manufacture of floor covering felt. Other machines are under construction for the manufacture of M. G. Kraft specialties, facial tissues, and high grade bristols.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

**THE PUSEY AND JONES CORPORATION**
**Established 1848. Builders of Paper-Making Machinery**
**Wilmington 99, Delaware, U. S. A.**

THE SIGN OF TRADE MARK SUPERIOR QUALITY

PAPER TRADE JOURNAL
Vol. 123, No. 3 July 18, 1946
Title Reg. U. S. Pat. Off.

## Marathon Employment Up 20 Per Cent

MENASHA, Wis.—Marathan Corporation at Menasha had 1,420 employes shortly after V-J day; it now has 1,720. This is an increase of more than 20 percent in the last 11 months. Returning veterans account for a large part of this increase, according to W. E. Strong, director of industrial relations.

The company now has 441 veterans of World War II on its payroll, with 289 of these having been employed there before they entered service. Veterans constitute 25.6 percent of the total number of employes.

Although a considerable number of the new employes have been hired to fill jobs relinquished by women who helped to relieve the labor shortage during the war emergency, expansion of production accounts for the greater part of the increased employment, Mr. Strong said.

Women still are being hired to fill stenographic positions and for other work for which they are especially fitted, and the total employment of women has decreased from 407 to 365.

Other statistics released by the personnel department show that of the 575 employes entering service from the Menasha plant, 330 have returned to the company after discharge from service and 87.6 percent of them are still on the payroll. The rest either remain in service, have entered schools under the GI Bill of Rights, have gone into business for themselves or have established themselves in other communities.

### National Cellulose to Expand Plant at Baldwinsville

SYRACUSE, N. Y.—The National Cellulose Corp. will expand its plant at Baldwinsville, erecting a modern manufacturing building costing $250,000, in addition to the cost of a 74-acre tract it is buying. It has an option on the new site between the Lackawanna Railroad and the Seneca River.

It will buy new facial paper machinery to cost about $251,704 and auxiliary pulper equipment and other machinery for the new plant. The present plant at Baldwinsville produces about ten tons of paper and two and one half tons of wadding daily and the new plant will have a production capacity of 30 tons a day.

# Canada's Dollar Stabilization Brings Newsprint to $73.80

TORONTO, Ont.—The first reaction of the pulp and paper industry to the action of the Canadian Government in boosting the value of the Canadian dollar to parity with the United States dollar, was a series of announcements from newsprint companies covering new price levels for newsprint. Abitibi Power and Paper Company led the van last week with an immediate increase of $6.80 a ton for certain grades of paper and was followed next day by Consolidated Paper Corporation and several other companies, which announced a similar advance. Three more companies followed suit July 12, supplying definite indications that the price hoist would be general throughout the Canadian newsprint industry. Other companies making the change included Price Brothers & Company, Ltd.; Anglo-Canadian Pulp and Paper Mills, Ltd., Donnacona Paper Company, Ltd., and International Paper Sales Company. The advance brings the standard price of newsprint delivered at New York City to $73.80 a ton, and the price in Montreal to $69.80. Later price bulletins to the same effect were put out by Great Lakes, Powell River, Donahue Brothers, St. Lawrence and Lake St. John.

A ten per cent advance in Canadian pulp prices to United States consumers became effective today.

The new price, announced here by Abitibi Power and Paper were: bleached sulphite, $103.40; unbleached sulphite, $90.20; bleached sulphate, $103.40; unbleached sulphate, $83.60, groundwood pulp, $63.80.

The Abitibi announcement said that at the end of June an increase in the price of newsprint paper was under consideration by the OPA in the U. S. when the OPA passed out of existence. Accordingly, the company considered it fair to put this price adjustment into effect during the present free market. If controls were revived, however, the OPA would be expected to proceed with the problem at the point where it was interrupted.

Dollar parity means an annual $27 million body-blow to the total earnings of Canadian pulp and paper companies. The immediate loss is calculated at about $19 millions on newsprint sold on the basis of New York funds. The

*(Continued on page 24)*

## Midwest Expects Price Changes

CHICAGO—Paper jobbers and sales offices in the midwest area report no appreciable price pressure as yet but are expecting some bulging out here and there once the Congress has definitely decided—along with the President—as to what is to be done with emergency price control. The industry indicates that it is not sufficiently naive to believe that prices will not go upward to some extent because the trade is cognizant not only of wage and other increases within the industry but of the terrific inflationary pressures coming from the outside and over which the trade has no control. However, the majority of those interviewed believe that once the control issue is settled—one way or another—production will improve within the industry not only because of the impetus to the trade but because of an improvement in the supply situation where chemicals and other vitally needed manufacturing ingredients may be improved production-wise.

Locally, all grades were in spirited demand with prices continuing about as if under OPA domination. There is too much uncertainity as to the status of the control program and as to what will be done between June 30 and the time the whole control procedure is decided upon. The "hold the line" policy has been admirable within the paper trade just as it has been in all industry where restraint has been the key word.

### Cuneo Interests Acquire D. M. Bare Mill in Pennsylvania

ROARING SPRINGS, Pa.—The Combined Locks Paper Company of Combined Locks, Wis., acquired by the Press interests last March, has contracted to purchase the D. M. Bare Paper Company of Roaring Springs, Pa., one of the oldest paper mills in the state. The new company will be operated as a subsidiary.

# Wisconsin Sees Forestry Trend Back to Private Ownership

MADISON, Wis. — Absorption of county forests by the larger paper companies has marked a definite trend. A half dozen instances have been noted recently where firms have purchased county forest holdings which only a generation ago were being turned over to those counties as tax delinquent by the lumber companies which had stripped them. The Wisconsin Conservation Commission has not explicitly approved the transfers as a policy, but has assumed a tolerant attitude, in view of the fact that the paper companies are as much concerned with reforestation to make sure of a constant supply of raw material as they are with making use of what is now at hand.

At a recent forestry conference, W. J. P. Aberg of the commission explained that the state agency is encouraging industrial forestry expansion, and that it realizes that industrial forests of efficient size cannot be created without impinging on the holdings of public agencies.

The counties had protected the forest lands and managed them, and in some instances had replanted them, through the cooperative forestry program for counties sponsored by the state government.

A manifestation of the trend is the negotiation now going on between the Consolidated Water Power and Paper Company, Wisconsin Rapids, one of the leaders in the industrial forest movement in the state, and Sawyer county for the purchase by the company of some 30,000 acres of county-owned forest land. Transactions of this nature must have the final approval of the Conservation commission. Another transaction was completed last year when Douglas county sold extensive stands of pine to the Mosinee Paper Company, Mosinee, Wis.

Criticism of the sale of public forests to private wood-using enterprises appears based chiefly on the fear that some day the lands may be stripped again and forced back upon the counties as tax delinquent. If the paper companies adhere to their present policies, as there is every indication they will, such fears are groundless.

## Gillespie Joins Transo Staff

HOLYOKE, Mass. — Francis M. Gillespie, who recently resigned as superintendent of the Nonotuck division of American Writing Paper Corp., has been named district agent for Transo Envelope Co. of Chicago. His sales territory covers Hampden, Hampshire and Franklin counties. Gillespie was with the American Writing for 25 years.

RICHARD J. BANDEKOW

Richard J. Bandekow has been appointed field representative of the Northeastern Wood Utilization Council. Mr. Bandekow graduated from the New York State College of Forestry and later received a master's degree from the Yale School of Forestry, where he took high rank. Since 1942 he has served as plastic and plywood research engineer for the Glenn L. Martin Co. of Baltimore. His training and experience make him admirably fitted for helping to organize utilization research and contacting wood users throughout the Northeast.

## Rockwell-Barnes Promises Fun, Foam and Fizz

CHICAGO—Customers and associates of the Rockwell-Barnes Company of Chicago are now receiving invitations to the annual golf outing and picnic to be held July 30 at the Bob-O-Link Golf Club in Highland Park, Illinois, a Chicago suburb. The invitations are in telegram form and contain a promise of "flocks of food, fun, frolic, foam and fizz." The program, it is reported, will include golf, prizes and a big dinner in the evening.

## Swanson Stresses Need

MENASHA, Wis.—Walter H. Swanson, assistant general superintendent in charge of pulp and chemical manufacture of Kimberly-Clark Corporation, spoke July 11 before the Menasha Rotary Club at Hotel Menasha on the outlook for the pulp industry for Wisconsin. He stressed the need for assurance of a more permanent supply of pulpwood and for better forestry policy which will provide a continuance of operation of plants using pulpwood.

## Forest League Seeks Better Protection

"Stop fiddling while the forest burns," is the advice of John C. W. Irwin of the "Save The Forests League," in a brief which he has prepared to present to Major-Gen. Howard Kennedy, the Ontario forestry high commissioner. Mr. Irwin notes that Commissioner Kennedy, accompanied by a number of technical foresters, spent May and June in Ontario's forests, and thinks this is a commendable approach to the problem. His brief states that the primary need is for the conquest of fire and to this end he recommends additional road patrols, the stopping and warning of highway travellers by properly uniformed officers, the increased patrol on foot, by boat or airplane, of areas frequented by tourists, more severe penalties for starting fires and carelessness.

In addition the brief recommends greatly extended use of fire weather prediction devices and the closing of forests altogether during danger periods. This is all in addition to a program of education. More careful attention must be paid to the elimination of fire hazards in the way of slash and further study given to the usefulness of fire guards. Fifty per cent more fire towers are suggested and means and equipment for more efficient suppression of fires, once started, must be secured, according to the brief, and more study given to the use of fireline plows and bulldozers. Trails and portages already in existence should be cleared of debris and the same should be done for streams and rivers to make them passable.

A new menace to Ontario forests may be under way, according to a report brought out to civilization by a trapper. Charles Dunn, while tending his traps in the York Factory area, about 550 miles northeast of Winnipeg, reports finding a strange insect, almost half an inch long, which stripped branches from spruce trees "as if with saws" and leaves white spruce "as bare as broomsticks". The insects cover an area from the western shores of Hudson Bay to The Pas area, about 500 miles. Entomologists and forestry officials immediately got in touch with Mr. Dunn and P. O. Thomas of the division of entomology of the federal agricultural department, said the department would have to obtain samples of the insect reported before it could be definitely identified and before any move could be made to prevent damage to trees. Dunn said he had first noticed the insects more than a year ago marching across ice on the Fix river in Northern Manitoba. The horde was about two miles wide.

## Smith Mills Elect Fair

TORONTO—A. E. H. Fair has been elected a director of Howard Smith Paper Mills, Ltd.

# The VICKERY FELT CONDITIONER

**is out of sight but not out of mind**

if you're thinking of continuous machine production and maximum water removal at the presses where it costs least.

**Here is visible evidence of the action of the Vickery Felt Conditioner on the felt. The four conditioner boxes have just cleaned the light areas and are moving to work on the dark areas.**

## BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

## Doyle Reports Surge In Union Bag Sales

Leonard J. Doyle, general sales maneger of Union Bag & Paper Corporation, who was elected to be vice-president in charge of sales last week has been with the company for 34 years, taking his first job in the Hudson Falls, N.Y., Union Bag plant—his home town—as a boy of 14. The tie was interrupted by World War I, after which Mr. Doyle returned from overseas in 1919, and entered the University of Pensylvania. While in college he worked as a salesman for Union Bag, and after receiving his Bachelor of Science degree joined the Chicago sales force. There he became successively Chicago branch manager, and Western sales manager, and in 1934 was named general sales manager with headquarters in New York.

Mr. Doyle said Union Bag & Paper plants at Savannah, Ga., and Hudson Falls are runing at capacity in an attempt to meet the unprecedented postwar demand for paper bags of all types. Twenty-five million bags are being turned out daily at the Savannah plant, while five million more of the specialty type, including cellophane bags, coffee bags and many others, are being produced each day at Hudson Falls.

The increased demand is a result of the big upsurge in retail buying since the end of the war, and the expanded use by industries which turned successfully to paper bag packaging when supplies of metal, textiles and wood ran low, Mr. Doyle said.

A fifth paper machine of the same size as the present four machines is being installed in the Savannah plant, largest pulp, paper and bag factory in the world, and will begin producing in 1947, Mr. Doyle stated.

### Union Bag Elects Hardenbrook To Board of Directors

New York, N. Y.—Election of Donald J. Hardenbrook, vice-president of Union Bag and Paper Corporation, to the company's board of directors and enlargement of his management activities was made public this week by Alexander Calder, president. Mr. Hardenbrook's responsibilities now include industrial and public relations, the company's Woodlands Division, and the various service departments including traffic, purchasing, legal and accounting.

### Mullen Retires from Ralston

E. G. Mullen, plant manager and technical director of W. Ralston Company, manufacturers of waterproof papers, has resigned. After serving as consultant of the WPB Container Coordinating Committee during the war in addition to his regular business activities, he is now enjoying a well-earned vacation.

Leonard J. Doyle
Union Bag Promotes Him

## Little Adds Four To Research Staff

Cambridge, Mass.—Recent additions to the staff of Arthur D. Little, Inc., industrial research organization, include Daniel Reid Weedon, Jr., packaging specialist; Dr. Colin C. Reid, organic chemist; Dr. George P. Fulton, biologist; and Garvin Bawden, Jr., market analyst.

Mr. Weedon, prior to joining Arthur D. Little, Inc., was a partner in Package Materials Laboratories, Inc., after discharge from the Navy as a Lieutenant Commander in November, 1945. He had served first at the Naval Air Experiment Station, Philadelphia Navy Yard, where he engaged in research on preservation and packaging of aeronautical material, and later on the staff of the Commander Air Force, Pacific Fleet as Staff Preservation Officer, where his work was primarily devoted to preservation of complete aircraft. Mr. Weedon is a graduate of Massachusetts Institute of Technology, General Engineering course, class of 1941.

Dr. Reid was previously instructor in chemistry at Williams College and research chemist at Sprague Electric Co. He graduated from Princeton University in 1938 and received his Ph.D. from Yale in 1941.

Dr. Fulton was recently discharged from the Army as Captain. He had served as aviation physiologist, first with the Altitude Training Unit at San Antonio, Texas, and later with the Aero Medical Laboratory at Wright Field. He is a graduate of Boston University, B.S. in 1936, M.A. in 1938, and Ph.D. in 1941 and previously taught biology there.

Mr. Bawden previously served as Supply Officer to the Naval Supply Depot, Bayonne, N. J., where he did reserach on pallet-loading operations. He received his B.A. in Business Administration from Dartmouth College in February, 1946.

## Masonite Reassigns Its Key Personnel

Chicago—Major changes in the executive sales personnel structure of the Masonite Corporation have been made public by Eugene Holland, president of the company.

Robert T. Miller, for some twenty years chief sales engineer of the organization has been appointed manager of the Industrial Division. In his new position Miller is charged with all industrial activities of Masonite Presdwood, Die Stock and other semi-plastic hardboards. George Syversen will become chief sales engineer.

The resignation of E. Howard Claypoole as advertising manager and director of public relations to become resident manager of an advertising agency's Chicago office has led to the appointment of Donald E. Allen to the top Masonite advertising post. Allen was assistant advertising manager.

Elmer J. Graebner who has been associated with the Cellufoam Products Division since 1939, has been promoted to the position of sales manager for this Masonite subsidiary. He will be responsible for all sales of Cellufoam thermal and acoustical insulation. The post was formerly held by John Bluhm, now general manager of the Cellufoam plant.

When Robert G. Wallace, Jr., eastern manager, left Masonite Corporation to enter the tile-board manufacturing business, Thorn C. Hulbert, former assistant to Wallace was advanced to the post of eastern division sales manager. Hulbert's new division includes the northeastern states and all of New England with the Boston sales office formerly headed by T. W. Mathewson, resigned, being closed. Hulbert's headquarters will be New York City.

Thomas G. Gaskin, who has managed the Masonite Concrete Form Division for fourteen years has been named central division sales manager.

On the Pacific Coast Charles H. Smith has succeeded W. Page Frambes, now retired, as Pacific Coast division sales manager. Prior to this appointment Smith represented Masonite Corporation in the states of Washington and Oregon.

The Mid-Atlantic Division sales office, with Louis McBarron as division manager has been moved from Philadelphia to the Tower Building in Washington, D. C.

Walter G. Stromquist, Assistant Vice President, summarized these sales policy changes by stating: "We have developed a more closely-knit organization through a program of streamlining the duties of the respective representatives in an effort to better serve our customers. Frankly, in these days of excessive demand we are doubling our efforts to make up, through service, for any inconveniences our customers may be encountering as the result of the unprecedented call for Masonite products."

# MUSIC IN YOUR EARS

We don't expect you to do any "swooning" when you hear the Hubbs theme song: "We Can Sell More for You in the East" . . . . but when production catches up with demand, BIGGER SALES and BETTER DISTRIBUTION will be sweet music in the ears of many mills and converters. A 32-page booklet, just off the press, sums up the advantages of distributing through the "Hubbs Houses". For your copy

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**GARDEN CITY PAPER MILLS CO., LTD.**
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**CANADIAN VEGETABLE PARCHMENT CO., LTD.**
MERRITTON, ONT.

**WAREHOUSES AT ALL THE ABOVE**

## Canada's Stabilization Brings $73.80 Newsprint

*(Continued from page 19)*

other $8 millions is the estimated loss on the sale of woodpulp to the U. S.

Shareholders' losses, however, will not likely exceed $11 million; approximately sixty percent of the total indicated loss will likely be sustained by the federal government on taxes. Against the indicated shareholder loss must also be set savings possibility of $500,000 yearly resulting from elimination of the United States premium on two-way pay bonds. Last year more than 2.5 million tons of Canadian newsprint were shipped to the United States. Through May this year approximately 1,320,000 tons have been sold to United States publishers and estimates place the year's total at three million tons—close to 80 percent of Canadian 1946 production.

On the basis of $67 newsprint, the current delivered New York price, Canadian mills formerly realized an exchange profit of about $6 a ton after deducting freight charges. Mill net, therefore, was the equivalent of $60 a ton, U. S. funds, on which the ten percent premium applied.

In woodpulp the tonnage affected is not as substantial as in newsprint; but the U. S. dollars realized per ton of woodpulp sales were greater. It has been estimated that approximately $90 a ton is being realized on woodpulp being sold in the U. S. this year. This would be the equivalent of an additional $8 a ton in earning power, after deducting freight charges. Last year the industry exported slightly more than one million tons of woodpulp to the U. S., and 1946 exports may again reach this total.

An indication that this increase, the fifth since May 1, 1942, may be followed by still another was shown in the announcement sent by at least one company to customers, and a copy of which was directed to the American Newspaper Publishers Association. The International Paper Sales Company, after notifying its customers of the rise, declared that the increase resulting from the recent revaluation of the Canadian dollar makes no provision for an increase justified by entirely different factors. The message explained that such an increase was supported by a delegation of United States newspaper publishers and was actively considered by the OPA when that authority lapsed.

"This," the message continued, "we are leaving in abeyance until Washington has had an opportunity to reach conclusions as to the future of price control. But if controls are revived we would expect the Office of Price Administration to act promptly in the direction which had been intended."

Representatives of numerous leading companies emphasized that a further increase was necessary to take care of wage boosts granted workers in the bush and in mills. It was apparent though that the companies would await Congressional action on the future of OPA before moving.

The possibility of a Congressional inquiry into the newsprint situation loomed yesterday when Representative Sikes of Florida urged creation of a special committee of the House to investigate monopolistic practices designed to manipulate prices. A committee of five members would be empowered to "make a study of any agreements or contracts, any trade practices, any combinations, cartels, monopolies, or any other means by which prices are controlled or manipulated in violation of the anti-trust laws." The Congressman said if the committee was authorized, he believed it should inquire first into the newsprint situation "on which considerable material has been submitted to me by publishers and printers."

## West Coast Newsprint Goes to $73.80 a Ton

PORTLAND, Ore.—West Coast paper manufacturers raised the price of newsprint $6.80 a ton late last week and indicated the increase would be general throughout the nation.

Both Crown-Zellerbach and Hawley Pulp and Paper Company, two of the country's main newsprint producers, said they boosted the price to $73.80 a ton as a result of a similar increase announced in Quebec today.

John H. Smith, president of the Hawley Company, said he understood all United States newsprint manufacturers were raising prices to the new level.

## Newspapers Used 36 Per Cent More Newsprint in June

Daily newspapers reporting to the American Newspaper Publishers Association consumed 259,284 tons of newsprint paper in June, 1946, compared with 190,511 tons in 1945 and 242,404 tons in 1941. This was an increase in June 1946 over June 1945 of 36.1 per cent and an increase over June 1941 of 7.0 per cent.

Papers reporting show that stocks of newsprint paper on hand were 30 days supply at the end of June 1946 which is a decrease of two days supply compared with stocks on hand at the end of May 1946. This 30 days supply at the end of June 1946 compares with 45 days at the end of June 1945; 54 days at the end of June 1944; 54 days at the end of June 1943 and 41 days at the end of June 1941.

The total estimated newsprint consumption in the United States for June 1946 was 365,189 tons which includes all kinds of uses of newsprint paper. For the first six months of 1946 it was estimated to be 2,101,072 tons.

During the first six months of 1946 the reporting newspapers used 1,491,761 tons of newsprint, an increase of 28.3 per cent over the first six months of 1945 and an increase of 1.7 per cent over the first six months of 1941.

## Newsprint Output Jumps in June

Newsprint production in Canada during June 1946 amounted to 334,207 tons and shipments to 322,805 tons according to the Newsprint Service Bureau. Production in the United States was 61,241 tons and shipments were 61,671 tons. The output in Newfoundland was 28,868 tons and shipments were 31,261 tons making a total North American production of 424,316 tons and shipments of 415,737 tons. Total production in June 1945 was 355,120 tons and shipments were 355,015 tons.

The Canadian mills produced 458,422 tons more in the first six months of 1946 than in the first six months of 1945, which was an increase of 29.7 percent. The output in the United States was 20,224 tons or 5.5 percent more than in the first six months of 1945; in Newfoundland production was 16,224 tons or 9.9 percent more, making a total increase of 494,870 tons, or 23.8 percent more than in the first six months of 1945, and also was higher than in any preceding similar period.

Stocks of news print paper at the end of June were 123,161 tons at Canadian mills, 6,416 tons at United States mills, and 69,879 tons at Newfoundland mills, making a combined total of 199,456 tons compared with 190,877 tons on May 31, 1946, and 163,876 tons at the end of June 1945.

## White & Wyckoff Renews Its Union Contracts

HOLYOKE, Mass.—Harry C. Dutton, president of White and Wyckoff Manufacturing Company, has declared the company's union contracts have been renewed for another year. The new contract includes a 12½ percent increase for factory wages and employes will be paid for three legal holidays during the year. One week's vacation will be granted for either 1,800 hours of work, or one year's service and two weeks after three years' service.

The new hourly rate has been established at 63 cents for women. The effective date of the increase was Monday, July 15th.

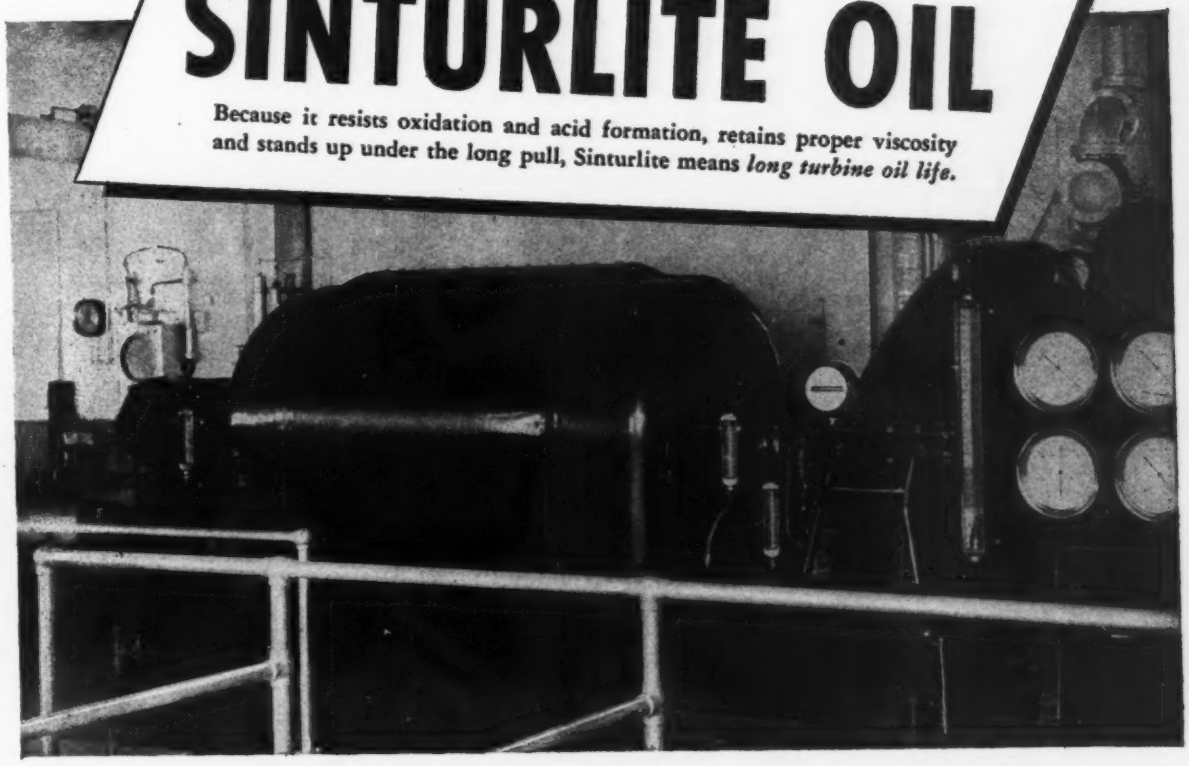
## Kimberly Strews Prizes All Over the Fairway

NEENAH, Wis.—About two hundred golfers teed off Saturday, July 13, in the annual Kimberly-Clark men's golf jamboree at Ridgeway Golf Club. Play started at 9 o'clock in the morning, but most of the players did not report until after lunch. There were awards for good, bad and indifferent golf, and many good fellowship prizes. This jamboree will qualify competitors in the annual K-C tournament which will be held later.

# For L-O-N-G-E-R TURBINE OIL LIFE *in the grueling grind*

## SINTURLITE OIL

Because it resists oxidation and acid formation, retains proper viscosity and stands up under the long pull, Sinturlite means *long turbine oil life.*



HIGH SPEED turbines . . . operated continuously, day and night, month in and month out, meet a grueling grind. For proper lubrication, turbine oil must be constant in quality, capable of extended life. Sinturlite is made specially to stand up under all conditions in this long pull.

Non-foaming, non-corrosive Sinturlite provides lubrication that offers protection against expensive shutdown with interrupted power supply. Try Sinturlite for turbine lubrication problems.

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FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

## Nekoosa-Edwards Is Set for Big Year

PORT EDWARDS, Wis.—Net income of Nekoosa-Edwards Paper Co. for the first six months of 1946 will be higher than the net for all last year, according to John E. Alexander, president and general manager. Sales, he said, also were ahead of the comparable 1945 period. Net income for the year ended Dec. 31, 1945, amounted to $421,153, or $1.67 a share on 252,000 common shares. Sales were $11,351,660 last year, an all-time record for the company.

The increase in net is attributed by company officials to the results of long established Nekoosa-Edwards policies, which are now starting to show up on the balance sheet and earnings statement. These factors include: An upgrading of paper qualities and grades. The company has been in transition—over the years it has moved from newsprint production through wrapping kraft to the goal, now almost realized, of output devoted to fine, treated and specialty papers. This program increases profits on each ton without raising tonnage.

For example, the company started making Nekoosa Bond paper ten years ago, at a time when 165 companies were in the bond paper field. Today the firm is one of the top three in bond paper output.

The company was the first to enter the tremendously important reforestation program. Started in 1926, to assure a continuous supply of pulpwood, today the program is on a perpetual yield basis, although the yield is not yet large enough to satisfy Nekoosa-Edwards' requirements. The company has purchased more than 100,000 acres of forest, and annual additions total at least 3,500 acres. About 5,000 cords a year are now being taken from the forests, and if it were needed the yield could be raised to 25,000 cords a year immediately.

The company was the first to install a waste heat recovery boiler which burns the wood waste residue left after paper making. The unit saves 65 tons of coal a day, and in addition many chemicals used in paper making are recovered from the unit's ash pit.

Because the water of the Wisconsin River is too polluted for fine paper making by the time it reaches Nekoosa, from the wastes of paper mills located upstream, the company made another unusual investment which is now paying dividends.

A third feature of the company's integration is the wholly owned subsidiary, Nekoosa-Edwards Light & Power Co., which supplies all the company's requirements as well as those of the towns of Nekoosa and Port Edwards.

## Kimberly-Clark Proposes New Stock Issues

NEENAH, Wis. — Kimberly-Clark Corporation on July 10 filed notice with the Securities and Exchange Commission in New York that a special meeting of stockholders will be held August 9 to consider increasing the corporation's common stock from 1,000,000 to 3,000,000 shares and to convert each of the 599,760 common shares now outstanding into two shares of common stock of no par value. The stockholders also will be asked to provide authority to issue 125,000 shares of preferred stock. This new issue is to be subordinate to the presently outstanding 4½ percent cumulative preferred stock.

## Crown-Zellerbach Sales At Peak

Consolidated net sales of the Crown-Zellerbach Corporation for the year ended with last April reached a new high of $102,074,559 and compared with $98,814,344 for the preceding fiscal year, the annual report disclosed. Prices remained substantially unchanged during the fiscal year except for an increase of $6 a ton in the maximum price for newsprint authorized by the Office of Price Administration and put into effect on Jan. 1.

The consolidated net profit for the year, after all charges, was $7,824,983, or $2.37 each, on 2,267,375 common shares outstanding, against $7,093,085, or $1.97 a common share, for the year ended on April 30, 1945.

During the year the corporation and its subsidiaries contributed $1,036,430 to employes' retirement funds, pursuant to plans put into effect on Sept. 1, 1945. Expenditures for plant additions, improvements and equipment aggregated $9,173,837.

As of April 30, last, working capital totaled $32,318,891, an increase of $1,719,693 over a year earlier.

## CPA Authorizes Improvements At Byron-Weston Plant

SPRINGFIELD, Mass., July 13—The Civilian Production Administration has authorized two units at the Byron Weston Company paper mill in Dalton for a total of $102,000. A filter plant for river water to relieve the town's water supply and aid in the greater production of paper is to cost $37,500, and a building to house rotary cookers necessary in paper making will result in the expenditure of $65,000.

## FINANCIAL RECORD OF THE WEEK

### New York Stock Exchange

High, Low and Last for Week Ending July 13, 1946

STOCKS

| | High | Low | Last |
|---|---|---|---|
| A. P. W. | 8⅜ | 8⅛ | 8⅛ |
| Armstrong Cork Co. | 58⅞ | 56 | 56 |
| Celotex Corp. | 34⅛ | 33 | 33 |
| Celotex Corp., pf. | 23 | 22 | 22⅛ |
| Certain-Teed Products Corp. | 25⅞ | 24½ | 25 |
| Certain-Teed Products Corp., pf. | .... | .... | .... |
| Champion Paper & Fibre Co. | 58 | 56 | 56 |
| Champion Paper & Fibre Co., pf. | 112 | 111½ | 112 |
| Congoleum Nairn Co. | 36¼ | 34¾ | 34¾ |
| Container Corp. of America | 52⅛ | 50½ | 51 |
| Continental-Diamond Fibre Co. | 14⅝ | 13⅞ | 13⅞ |
| Crown-Zellerbach Co. | 35⅛ | 34 | 34⅞ |
| Crown-Zellerbach Co., pf. | 108⅝ | 108¼ | 108⅝ |
| Dixie Cup Co. | 48½ | 47 | 47 |
| Dixie Cup Co.—A | 59¼ | 57 | 59¼ |
| Flintkote Co. | 40¾ | 38 | 38¼ |
| Flintkote Co., pf. | .... | .... | .... |
| Robert Gair | 10½ | 10 | 10 |
| Robert Gair, pf. | 20⅜ | 20⅛ | 20⅜ |
| International Paper Co. | 49⅞ | 46½ | 48½ |
| International Paper Co., pf. | 124½ | 118 | 120 |
| Johns-Manville Corp. | 152 | 145½ | 146 |
| Johns-Manville Corp., pf. | 136½ | 130¼ | 130¼ |
| Kimberly-Clark Corp. | 67½ | 66 | 67 |
| Mac Andrews & Forbes | 40½ | 39¾ | 40½ |
| Mac Andrews & Forbes, pf. | .... | .... | .... |
| Masonite Corp. | 68 | 66¾ | 67½ |
| Mead Corp. | 27½ | 23¾ | 25½ |
| Mead Corp., pf. A—6% | .... | .... | .... |
| Mead Corp., pf. B—5½% | .... | .... | .... |
| National Container Corp. | 34⅜ | 31¼ | 32 |
| Paraffine Companies, Inc. | 84 | 84 | 84 |
| Paraffine Companies, Inc., pf. | .... | .... | .... |
| Rayonier, Inc. | 29⅜ | 27⅞ | 29 |
| Rayonier, Inc., pf. | 38 | 37¾ | 38 |
| Ruberoid Co. | 55 | 54½ | 54½ |
| Scott Paper Co. | 61 | 58 | 59 |
| Scott Paper Co., pf. | 110 | 109 | 109 |
| Sutherland Paper Co. | 44¾ | 44 | 44½ |
| Union Bag & Paper Corp. | 38 | 36½ | 36½ |
| United Paperboard Co. | 15⅜ | 13¾ | 14⅜ |
| U. S. Gypsum Co. | 125 | 123¼ | 123¾ |
| U. S. Gypsum Co., pf. | 203 | 203 | 203 |
| West Virginia Pulp & Paper Co. | 49 | 46½ | 46½ |
| West Virginia Pulp & Paper Co., pf. | .... | .... | .... |

BONDS

| | | | |
|---|---|---|---|
| Abitibi Pulp & Paper Co. 5s '53 | .... | .... | .... |
| Celotex Corp. 3¾s '55 | .... | .... | .... |
| Certain-Teed Products Corp. 5½s '53 | .... | .... | .... |
| Champion Paper & Fibre Co. 3s '65 | 105½ | 105½ | 105½ |
| International Paper Co. 5s '47 | 101¼ | 101 | 101¼ |
| Mead Corp. 3½s '53 | .... | .... | .... |

### New York Curb Exchange

High, Low and Last for Week Ending July 13, 1946

STOCKS

| | High | Low | Last |
|---|---|---|---|
| Great Northern Paper Co. | 45 | 41⅜ | 43½ |
| Hummel-Ross Fibre Corp. | 18 | 17 | 17¼ |
| St. Regis Paper Co. | 14¾ | 14⅛ | 14⅛ |
| Taggart Corp. | 10⅜ | 10¼ | 10⅜ |

BONDS

| | | | |
|---|---|---|---|
| American Writing Paper Co. 6s '61 | 102½ | 102½ | 102½ |

# Facts Every Young Mill Man Should Know

From E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department
Wilmington 98, Delaware

**1 YOU MAY THINK** it takes a long time to get to the top in the papermaking business. But papermaking is an old craft—an essential skill that offers security and advancement to the young man with initiative—and patience is a watchword of the industry.

**2 WATCH WHAT GOES ON** around you; without neglecting your own job, learn all the others. Ever notice how many things your superintendent knows? And how he finds the answers to technical problems in special sciences not his own? He often asks his suppliers. In the chemistry of papermaking, he asks Du Pont.

**3 IN YOUR OWN MILL LABORATORIES,** where production controls are maintained, you've seen evidence that chemistry has an important part in good papermaking. "Lignasan" bactericide and fungicide is one of Du Pont's products for your industry—a bactericide and fungicide that controls slime in pipes, screens, headboxes, rifflers, etc. You can bleed it into the system at trouble spots—or add it at the beater, about four ounces per ton of dry fiber. Check with almost any old-timer in papermaking, or consult your Du Pont man.

**Du Pont Lignasan**
REG. U. S. PAT. OFF.
*Bactericide and Fungicide*
CONTROLS SLIME—PRESERVES PULP

BETTER THINGS FOR BETTER LIVING
*...THROUGH CHEMISTRY*

DU PONT
REG. U. S. PAT. OFF.

## How many St. Regis products in this picture?

Magazines and mail order catalogs are printed on St. Regis paper. Your breakfast eggs probably came out of a refrigerator that had breaker strips and a molded inner door of Panelyte . . . the St. Regis Plastic. There's fifty pounds of family flour in the St. Regis Multiwall bag being delivered. The table-top is easy-to-clean Panelyte, as is the working space alongside the sink. Telephone books and writing pads start with trees grown on St. Regis timber land . . . pulp and paper were made in St. Regis mills.

Incidentally, if you are smoking while reading this, the chances are that your cigarette package is of St. Regis Paper. Oh yes, and if you have a sack of fertilizer or cement in the garage or basement it's probably a St. Regis Multiwall paper bag.

These examples typify the wide range of wood cellulose products which St. Regis Paper Company is supplying to twenty-one basic American industries.

***St. Regis "Tacoma" bleached and unbleached sulphate pulp*** for multiwall bag paper, printing and specialty paper, base stock for Panelyte, and for sale to paper mill customers.

***St. Regis Multiwall Bags and Bag-filling Machines*** are providing better heavy-duty packages and faster, more economical packaging for manufacturers of food products, chemicals, building materials, feedstuffs, and fertilizers.

***St. Regis Printing, Publication and Specialty Papers*** have a reputation for excellent performance and quality. St. Regis developments in bleached groundwood papers assure even finer lightweight printing papers in the near future.

***Panelyte — The St. Regis Plastic,*** because of its lightness, strength, insulation properties, and corrosion resistance, is widely used in such basic industries as the automotive, electrical, aviation, communications, furniture, and refrigeration.

*Inquiries will receive prompt, careful attention from any one of the sales offices listed below.*

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# *Reduce Losses from Slime with Hooker Chlorine*

ARE your operations halted from time to time by "slime" clean up? Is efficiency of your heat transfer lowered because of slime growths and deposits in condenser tubes? There is no need to put up with costly "slime" when you have Hooker Liquid Chlorine available.

The use of chlorine to maintain freedom from decay-producing biological growth in pipe interiors, vat corners, and walls as well as in condenser water is paying off in many pulp and paper mills. Besides producing economies in lower operational costs, chlorination results in a cleaner product.

With the use of chlorine in the water, a more nearly "closed system" is possible, with the re-use of white water and consequent savings from reductions in heat input and material requisite in make up.

You who are using Hooker Chlorine in the preparation of bleach liquor know that you can depend on its consistently uniform high purity. Extend its usefulness and value to you in slime control. Hooker's Technical Staff is ready to help you in the application of chlorine and the other Hooker Chemicals to your particular operations.

A request on your company letterhead will bring you a copy of the "Hooker Liquid Chlorine" Booklet that contains information that will help you. Send for copy.

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CAUSTIC SODA CHLORINE MURIATIC ACID SODIUM SULFIDE 2986

# As a Paper Mill Man Views Wreckage in Austria

By Arthur S. Cosler

Chief, Paper Subsection, U. S. A. C. A.

ARTHUR S. COSLER

VIENNA—The Austrian paper industry was quite thoroughly integrated with the German industry before the Anschluss, March 13, 1938. Exports of pulp wood and of chemical and mechanical pulp went chiefly to Germany, which in turn sold Austria most of the supplies and raw materials the industry had to import. After the occupation this integration was intensified, Nazi ownership and management were injected, the Austrian forests were seriously overcut to supply Nazi war needs, and the Austrian exports added to the external credits of the Reich.

When Austria was dismembered after World War I it retained 25 percent of the original useless non-productive land and only 8 percent of the arable land, but it kept 17 percent of the original forest area and about the same proportion of the original population. It lost the rich agricultural lands that went to Czechoslovakia and Hungary. With them went the beet sugar industry, most of the grain and general farming, animal production and dairying. Economically it was a badly unbalanced country and had to build its economic structure from the ground up. Fortunately regulations for the preservation of the forests had been enacted into law under the old Austro-Hungarian Empire in 1878 and the Republic of Austria had its paper mills, sawmills and labor to produce wealth from this chief economic inheritance.

By 1937 the pulp and paper industry was exporting half the value of its production, thus supplying 10 percent of the country's total exports. The new Republic never had a so-called favorable balance of trade, therefore these external credits were virtually important and made the paper industry economically more important than even the relative value of its products warranted. The country was and is paper conscious and should be, for it stood seventh in world paper industry exports with 3 percent of the total. By comparison the United States producing 30 to 40 times more pulp and paper in tons stood sixth with 4 percent of the world total.

The Austrian industry while small, produces all the types of paper needed for domestic consumption and to supply its broad export market. There are 116 production units (i.e., pulp mills, paper mills or board mills), combined into 76 plants. Paper grades range from coarse wrappings to all-rag and cigarette paper. Pulps manufactured include brown and white mechanical pulp, unbleached and bleached chemical pulps (mostly sulphite), and high alpha cellulose, the so-called dissolving pulps. Even some filter mass is produced. Total output is limited at present because of shortage of fuel and wood, to 50 percent of prewar normal (and even less compared to prewar top production). By stringent wood economics the industry can be brought to normal by 1950.

The coordination of pulp production with annual growth of the forest here is interesting. Forest area, the proportion and distribution of the various species, the theories of management and methods of harvesting the forest production in this country where forestry had, before the Anschluss, attained the importance and influence we would like it to have in America, belong to the domain of my friends the foresters. The subject has been discussed by authorities in that field.

Paper mill equipment differs from American practice in many details. The great majority of the machines are slow and less than 78 inches wide, while some half dozen are about 120 inches wide. Some old machines have been improved and rebuilt to run at speeds comparable to average American machines on book and writing. Dryers are commonly set in small groups, usually three, rather than on continuous frames carrying 30 to 100 dryers. Head boxes are relatively lower for the same speeds, and inclination and shake of wire are not so pronounced. Suction couches are not so much in evidence. Beaters are always Hollanders here, usually have cement tubs (here called stone), and small ones in some fine paper mills hold 300 pounds only of dry halfstuff to the charge. Jordans are few and refiners practically unknown for stock preparation. The effective old-paper reduction and slurry systems we have developed are missing. Four kollergangs with two 16x60-inch stone rollers each are used in one good mill to work up 16 to 17 tons of mixed paper per 24 hours.

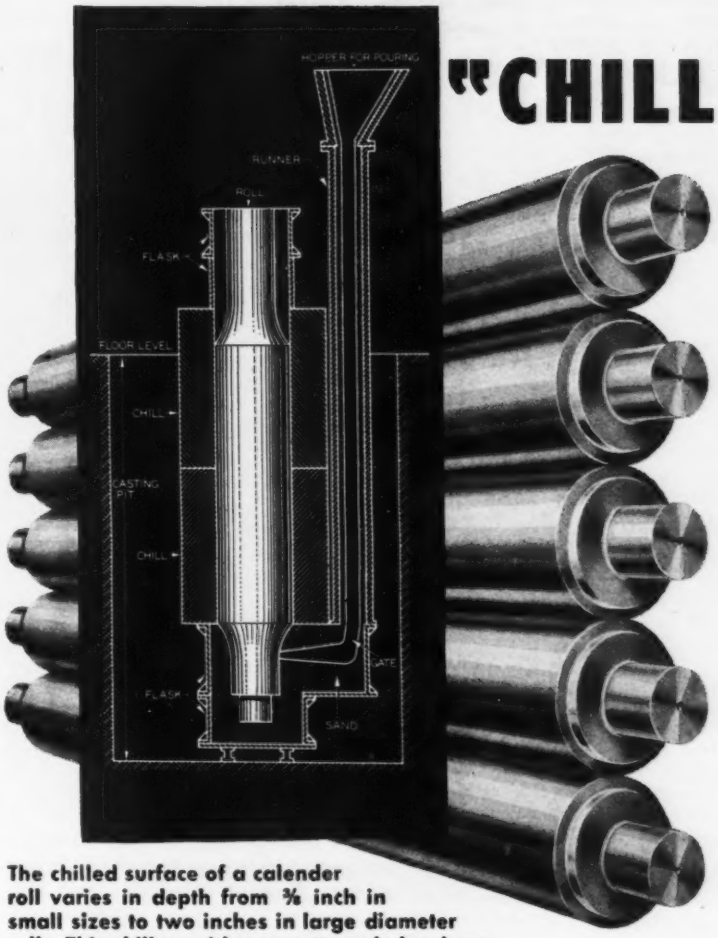
However, these mills are suited to conditions here and inadequate for their task. One of the easiest ways to lose money would be to replace these machines with modern units on most of the grades here. Almost all factors favor the present equipment, the present low capital charges, low labor rates, the small size of orders and short runs, and the great variety of grades and weights made in one mill.

There may be rapid changes in the near future, for the paper mills can only convert about half the pulp which the pulp mills can produce. It is logical and important economically, to make this pulp into paper before exporting, in order to greatly increase the external credits for Austria. It may be found feasible to install modern high capacity machines, to convert this export pulp tonnage, in quantity, into the minimum number of grades that will put it all into export paper tonnage.

Equipment in the pulp mills is not noticeably small. There are some small digesters but there are also some 300-cubic meter digesters and these 1095-cubic foot digesters are a respectable sized unit in any country. They get yields per cook of 22 to 28 long tons, depending on the kind of wood used, the type of pulp made, the kind of chip packing equipment used and the process variations employed.

There are seven process types of pulp made here, white and brown mechanical pulp, unbleached and bleached sulphite and sulphate pulp, and high alpha cellulose or dissolving pulp. For comparison the writer is familiar with these and seven more in America. Bleached and unbleached Mitzcherlich, Kebra and soda pulp, and semi chemical pulp. The predominant pulp woods here are spruce, pine and beech. Almost all mills use chip packers and circulating systems with both direct and indirect heating. Not much attention is paid to high total and free sulphur dioxide, while combined is about the same as in the States. Cooks are usually longer and most mills use "shut in" periods, some as many as 3 "rest" periods in each cook. A majority of the mills make semi Mitzcherlich pulp, mostly indirect heating and wash the stock out of the digester with not much pressure behind it. They do much by following practices we have either abandoned or refused to adopt.

The board mills differ most from our conception. Very little "folding boxboard" is made, none in the so-called board mills. They all make a hand




The chilled surface of a calender roll varies in depth from ⅜ inch in small sizes to two inches in large diameter rolls. This chill provides an extremely hard surface capable of taking and holding a smooth, mirror-like finish. The strength of a roll lies in the gray iron structure below the chill.

# "CHILL CONTROL" gives Farrel rolls LONGER SERVICEABILITY

"Chill Control" is Farrel's proved ability to give every roll a clear, hard, chilled iron skin, *deep enough to provide maximum wear life* but not so deep as to detract from the strength of the roll.

*Determining and controlling* the correct relation between depth of chill and strength of roll requires a high degree of skill and experience. Farrel has accumulated this skill and experience over nearly a century of casting, machining and grinding thousands of different sizes and types of rolls in *America's largest specialty roll shop* at Ansonia.

To you, the roll user, Farrel's background of roll-making success is of dollars-and-cents importance, for it is your assurance that any roll you buy from Farrel will give the maximum amount of paper-making service.

*When you need rolls or any of the other equipment listed here, call Farrel. Complete information and engineering help are yours for the asking, any time.*

FB-318

**FARREL PAPER MILL MACHINERY**

**ROLLS:** Chilled Iron, Dry Sand, Meehanite, Alloy Iron, Steel, Chromium Plated
**FOR:** Calender Stacks
Board Calenders
Super Calenders
Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
Coating Rolls
Creping Rolls
Plater Rolls
Cutting Rolls
Paraffining and Waxing Rolls
Saturating Rolls
Silicating Rolls
Miscellaneous Special Purposes
**CALENDERS:** Paper and Board
**GRINDING MACHINES:** Roll
**CALIPERS:** Roll
**GEARS, CUT:** Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
**SPEED REDUCING GEAR UNITS**
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Farrel-Birmingham

skinned board on wet machines, operating much like the panel board mills in our country. The product name "pappe" means many layers combined in the wet state. The board sheets are usually a little less than 48 inches, instead of 60 inches to 84 inches wide and are termed white, grey or brown board depending on whether white mechanical pulp, old papers, or steamed ground wood is used. Air drying gives it some excellent properties of stiffness and strength. A large proportion of it is made into boxes for shoes and merchandise but some is exported as board or as manufactured articles such as beer coasters. It is an industry that could not exist in the United States because of labor costs and the product is imported there only in small quantity for special uses.

Power plants do not differ appreciably from ours. Hydraulic and steam plants are smaller but they have full overload and underload cut-outs, lightning arresters, surge protection and network interconnecting features that are found in our larger plants. There seem to be more frequency and voltage combinations here than home, but the writer recalls one plant where he had 120 volt D.C., 220 volt, 60 cycle and 110 volt, 25 cycle A.C. The steam plants do a good job with what they have, for there is very little bituminous (so-called "hard coal" here) in Austria. Most mills burn all or some brown coal with water content as high as 30 percent and a thermal value of 2600 to 2800 cal. It is worth noting that the hydraulic power production of Austria could be appreciably increased in the near future.

No man could see much of, or write or talk much about the Austrian paper and pulp industry without acknowledging the high caliber of its leadership. Almost all top executives are Doctors, Diploma Ingeneurs or Doctor Ingeneurs, and are the technical and engineering, as well as the business heads of their organizations. During 35 years they have done a splendid job of building an industry on export business against strong competition. They have had Oepa, the selling section of the Austrian Paper Verband, through which all sales were made, but otherwise were without government or diplomatic backing or strong Austrian international banking facilities.

## Marathon Golfers Compete For Leo Croy Trophy

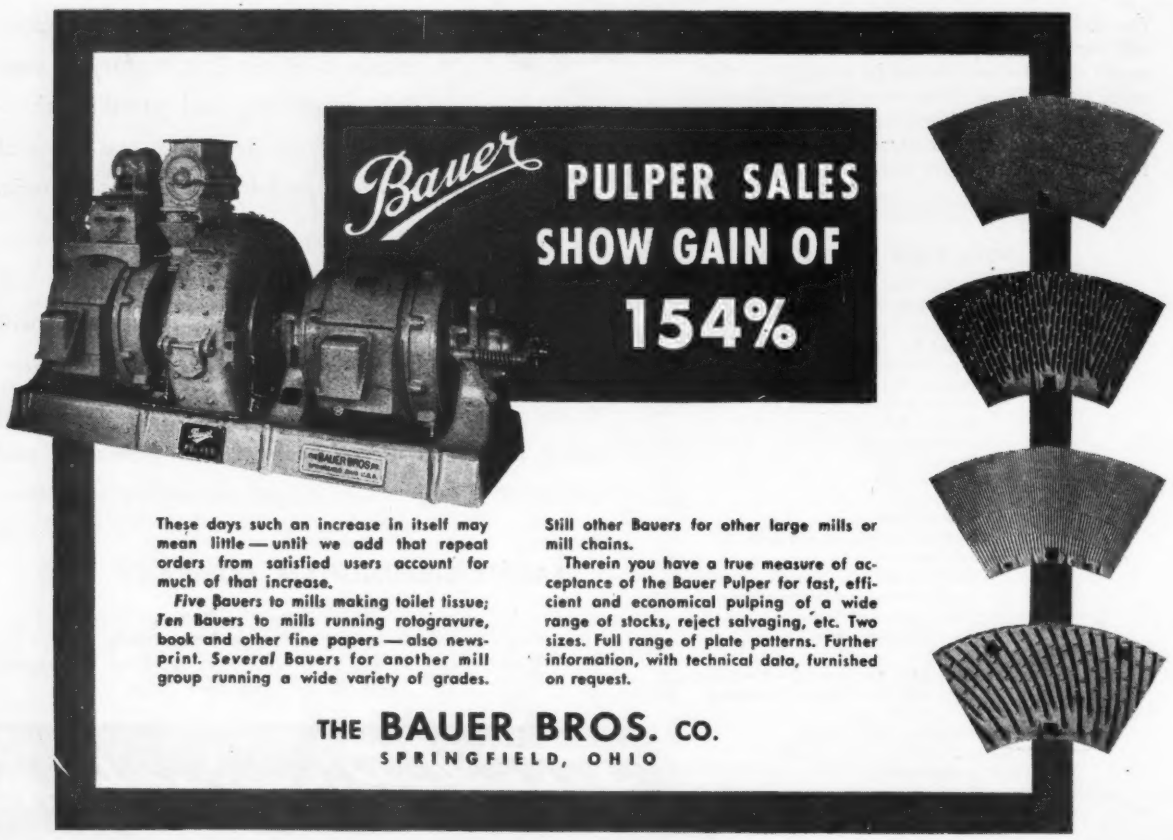
MENASHA, Wis.—The Leo E. Croy trophy will be the outstanding award at the annual golf jamboree of Marathon Corporation at Ridgeway Golf Club on Saturday, July 20. This trophy, now held by Jere Ottman, is awarded to the golfer with the low net score for the day. Other prizes will be awarded for low and high gross scores, drives closest to the pin, longest drives, blind bogey, poker golf and for the average golfer. Many good fellowship prizes also will be awarded.

## Argentine Output Continues Upward

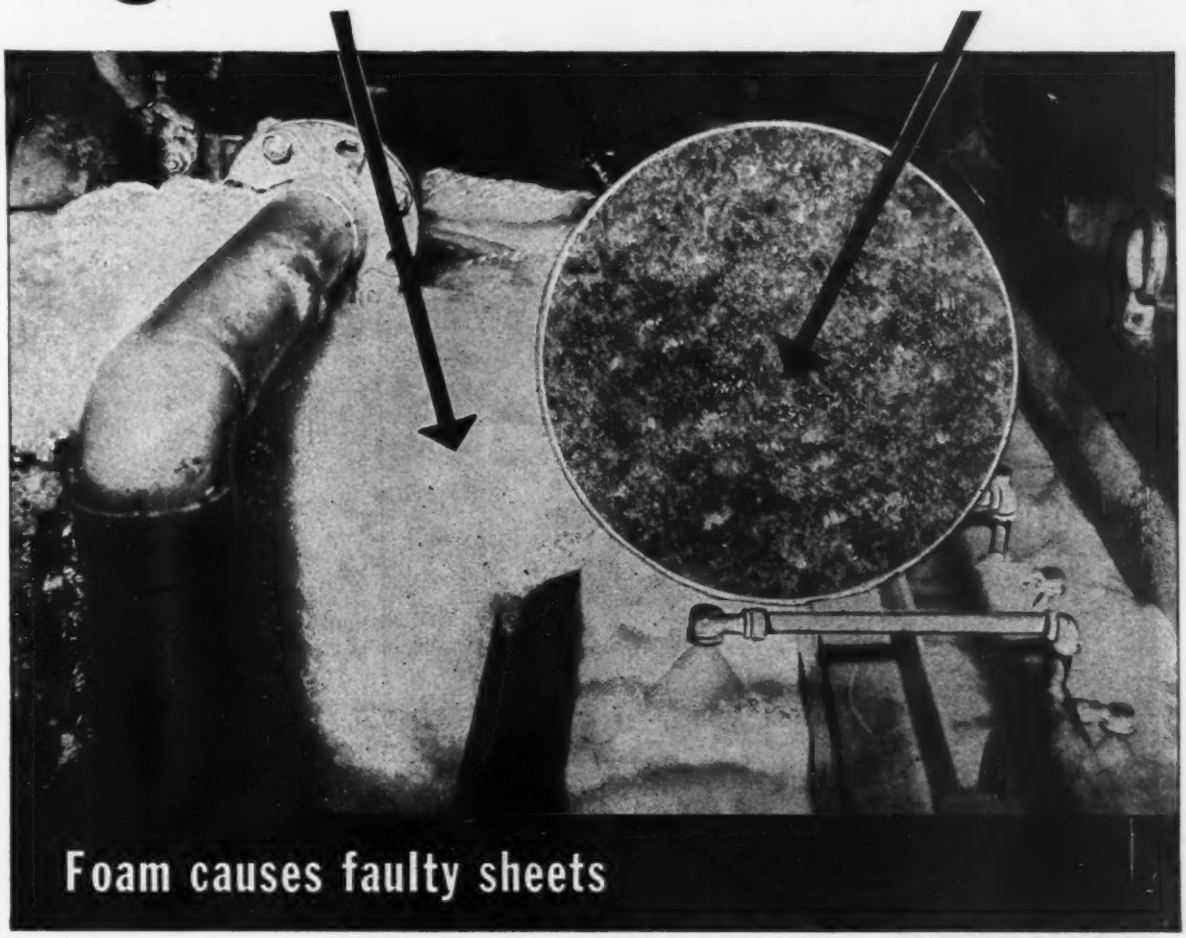
WASHINGTON — Argentina's rapidly expanding paper industry was able to provide for the country's minimum needs in 1945 in most lines other than toilet tissue, cigarette paper, some grades of vegetable parchment, certain specialized papers and paper products, and newsprint, according to a report to the Department of Commerce. Only with regard to newsprint did the shortage at times become critical.

Argentina, which normally consumes approximately 154,000 short tons of newsprint, was receiving less than 50 percent of the normal shipments during most of 1945. Due to somewhat heavier newsprint arrivals in the last two months of the year, final import figures showed a total of 107,338 short tons for the year. Of the total newsprint imports, 29,177 tons were from Canada, 39,410 tons from Newfoundland, and 38,751 tons from Sweden.

Although official pulp and paper statistics for 1945 have not yet been released, it is estimated within the trade that production of chemical and mechanical pulp surpassed the 66,000 ton mark for the first time in the nation's history. A comparison of this figure with the 1936 production of 6,564 short tons of pulp gives an indication of Argentina's progress. The paper industry produced 192,500 tons of paper of all types in 1944, the last year for which figures are available.



Bauer
PULPER SALES
SHOW GAIN OF
154%
These days such an increase in itself may mean little — until we add that repeat orders from satisfied users account for much of that increase.
Five Bauers to mills making toilet tissue; Ten Bauers to mills running rotogravure, book and other fine papers — also newsprint. Several Bauers for another mill group running a wide variety of grades.
Still other Bauers for other large mills or mill chains.
Therein you have a true measure of acceptance of the Bauer Pulper for fast, efficient and economical pulping of a wide range of stocks, reject salvaging, etc. Two sizes. Full range of plate patterns. Further information, with technical data, furnished on request.
THE BAUER BROS. CO.
SPRINGFIELD, OHIO

# neglect this...and you get THIS




Failure to control foam in the head-box, cylinder vats, screen boxes, or on the wire jeopardizes paper quality through thin spots or faulty paper formation.

Don't give foam a full head—smash it *quick* with NOPCO-KF. It's not unusual for NOPCO-KF to clear the head-box of foam in less than two minutes, the wire in less than five minutes.

## Thin Spots 75% Eliminated

Even in capacity operations, NOPCO-KF . . . the super "bubble buster" . . . dissipates entrained air—the common cause of thin spots—as if the stock were being handled at slower speeds. That's because NOPCO-KF keeps working on the wire. This positive foam control, plus better fiber dispersion, improves sheet formation.

*Other NOPCO-KF advantages*—reduced breaks, improved surface characteristics, increased water repellency, conservation of paper-making material. Test this NOPCO chemical—expressly formulated to aid sheet formation—in your *mill*. Order enough for a trial run. Write, wire or phone.

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**HARRISON, N. J.**

**Branches:**
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*An affiliate of the American Pulp and Paper Mill Superintendents Association*

# NOPCO-KF

NOPCO **EVOLVED THROUGH RESEARCH**

## Wisconsin Paper Mills Hire More, Work Shorter Hours

MADISON, Wis.—Employment in the paper and paper products mills of Wisconsin during May increased 0.3 percent over April, according to the Industrial Commission of Wisconsin. The comparative figures were 25,800 and 25,700. Because of a reduction in the number of hours worked, however, weekly payrolls were 2.1 percent lower, or $1,068,000 as compared with $1,091,000. Average weekly earnings per worker were $41.42 for 43.7 hours, or 94.9 cents per hour.

Twenty-two paper and allied products firms in Milwaukee county reported a 0.5 percent decline in the number of workers, who totaled 2,374, and payrolls totaled $101,344, the variation being less than 0.05 percent. Per worker weekly earnings averaged $42.69 for 45.5 hours, or 93.8 cents an hour.

## KCA Names Picnic Chairmen

NEENAH, Wis.—Committee chairmen for the annual Kimberly-Clark Activities picnic, scheduled for August 4 at Riverside park, have been appointed by the KCA Main Board. These chairmen will appoint their workers and make arrangements for their projects.


"You're Beaten to a Pulp! Come Clean!" says SOLVAY LIQUID CHLORINE

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## Insulation Board Institute Proposes Revisions

WASHINGTON, D. C.—The National Bureau of Standards announces that a revision of Simplified Practice Recommendation R179-42 for structural insulating board (wood or other vegetable fiber) has been proposed by the Insulation Board Institute. The standing committee in charge of the recommendation has approved the proposal for distribution to all interests for comment, acceptance or both.

The proposed revision includes certain changes in the recommendation as promulgated in 1942. Building board in the ¾ inch thickness; sheathing in the 8½ and 9½ feet lengths; insulating plaster lath in 16- and 24-inch widths; tile-board in 8 x 8 inch size; and plank in 6 feet lengths are no longer included as recommended standard stock-production items. Also the thin board has been dropped from the recommendation as this type of board is not considered to be an insulating board product. A simplified list of recommended sizes, thicknesses, edges and surface colors has been added for interior boards (factory finished), also surface colors are recommended for building board, tileboard and plank.

## Junior Tradesmen Graduate In Neenah Training Program

NEENAH, Wis.—A special program was held at 6:30 Wednesday evening, June 26, at the Valley Inn when two of the junior tradesmen of the Lakeview and Badger-Globe mill program were "graduated."

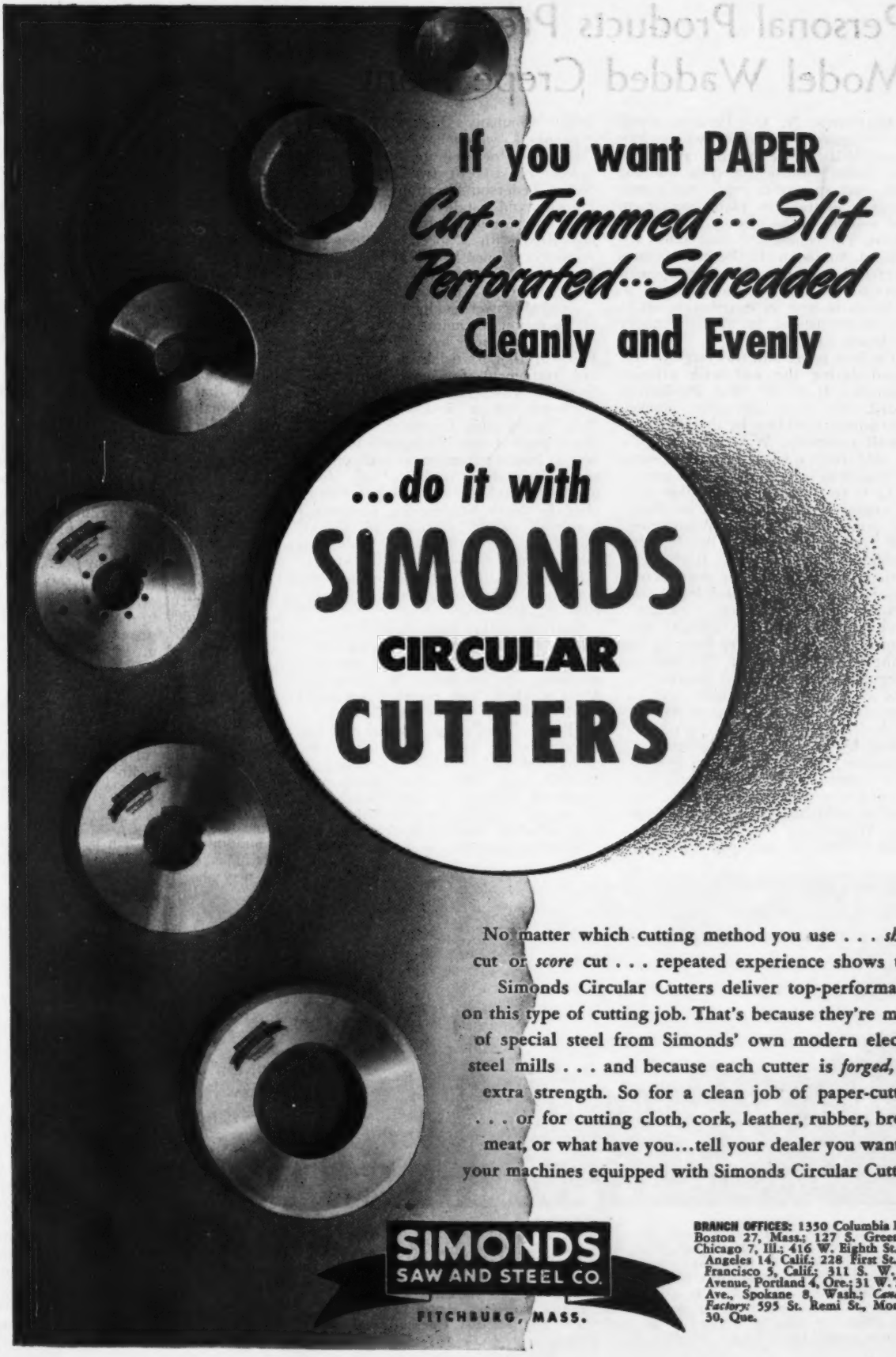
C. W. Nelson, James Whelan and the two mill managers, Howard Palmer and John C. Wollwage, and A. T. Hudson of the Kimberly-Clark Corporation staff, and Carl Christensen, director of the Neenah School of Vocational and Adult Education, spoke briefly.

The junior tradesmen program at Kimberly-Clark was inaugurated early in 1940 but has been expanded with the provisions for on-the-job training for veterans of World War II. At present 23 junior tradesmen are enrolled in the course, 20 of whom are veterans.

Most of the training courses offered at present are of three-year duration except for welding, which is a two-year course. The four trades approved by the state industrial commission for on-the-job training include converting mechanics, millwrights, electricians and welders.

## Mary Lummerding Heads Thilmany Girls Club

KAUKAUNA, Wis.—Miss Mary Lummerding is the new president of the Thilmany Girls Club, which held its first meeting of the season on June 24. The business meeting was preceded by a dinner and program.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# Personal Products Presents Model Wadded Crepe Plant

MILLTOWN, N. J. — Personal Products Corporation's new two-machine Paper Mill for the manufacture of facial tissue, absorbent creped wadding and other specialties represents a substantial addition in plant, equipment and volume to the already large operations. The company is now substantially self-subsistant in the manufacture of creped specialties and all component parts of its finished products, and in addition, is now in distribution on ts newest product—a facial tissue under the brand name "YES".

The new paper mill was largely completed during the war with priority assistance from the War Production Board. The two high-speed Yankee Fourdrinier machines by the Bagley & Sewall Company, Watertown, N. Y., are 142 inches in width; the speeds are stated to be considerably in excess of 1,000 feet per minute. Yankee dryers engineered and supplied by Pusey and Jones Corporation, Wilmington, Del., represent the latest development in high-pressure dryers. High-speed suction press units were engineered, manufactured and installed by Downingtown Manufacturing Company, Downingtown, Pa., for efficient mechanical removal of water prior to the drying process. Stock preparation equipment engineered and installed by Dilts Machine Works, Fulton, N. Y., represents the latest design in refining and hydration of stock by high speed cycling hydrafiners. All tile work in connection with the Dilts stock preparation equpiment, the white water system, and wire pits, was engineered and installed by Stebbins Engineering Company, Watertown, N. Y.

The mill's water supply is filtered on Infilco Company's high speed gravity type filters, which have a capacity of 700 gallons per minute. The recovery system consists of two high-capacity Sveen Pederson filtration systems engineered and installed by Bulkley, Duntin Pulp Company, Inc., and is synchronized with a special white water system developed by Alvin H. Johnson & Company, Inc., New York, paper mill engineers for the company.

Central power equipment to supply all operations including the new paper mill is supplied by 650-horsepower Erie City boilers using oil with standard equipment for coal conversion. Steam is produced by means of a supertherm system installed by J. O. Ross Engineering Company which delivers hot water at 375 degrees Fahrenheit to heat exchangers at each operation, where steam is flashed off. Main pumps through out the mill were supplied by Nash Engineering Company, South Norwalk, Conn., and Gould Pumps, Seneca Falls, N. Y. Piping in the new mill represents the latest development in the use of Transite piping supplied by Johns-Manville, Manville, N. J.

Instrumentation controls on the machines were supplied and installed by Mason-Neilan. Roll pressures on the machines are controlled by Hannifin Air Cylinders. The complete air and ventilation system was installed by J. O. Ross Engineering Company. The drives for the paper machines were engineered and supplied by Reliance Electric and Engineering Company, Cleveland. These are direct sectional drives transmitting the power through Falk reducers assuring perfect control of sectional machine speeds.

The Personal Products Corporation paper mill building, in keeping with the company's other operations at the same site, is of buff color satin finish tile inside and out, has no windows and is lighted by fluorescent lights which give the machine operators uniform, non-glare direct lighting with complete elimination of shadows. The Paper Mill building itself is 200 feet by 85 feet—single span. All manufacturing divisions of the company are on one level, eliminating stairways, elevator shafts and permitting complete utilization of all space and fast internal transportation by electric truck.

## Union Bag Box Plant To Be Started Soon

SAVANNAH.—Union Bag & Paper Corporation has made public plans for the construction of a new box plant for the manufacture of kraft corrugated shipping containers. The information was given out by Alexander Calder, President.

The new plant, which will provide a fully integrated operation from wood pile to finished boxes, will be of brick and steel construction and will cover an area of approximately 160,000 square feet.

Ground breaking for the new building, which will be adjacent to the company's huge Savannah bag making operation, will take place as soon as building permits are cleared and it is hoped that operations will be under way shortly after the first of the year, Mr. Calder said.

"House in a streamlined, modern, one-story building of concrete blocks and steel construction and other noncritical materials," a company spokesman said, "the new facilities will provide the same integration from wood pile to finished boxes that already exists in the company's extensive Savannah bag-making operations.

"Employment will be in the neighborhood of 300 to 400. Plans for the operation call for expanded employment as the plant gets into full production."

Mr. Calder, announcing the company's expansion plans, pointed out that the operation will provide a completely new industry for Savannah, and that opening of the new box plant will round out the line of paper packaging products already manufactured by Union Bag.

"Ground breaking will be as soon as building permits can be cleared and it is hoped that operations will get under way shortly after the first of the year."

Officials pointed out that when the new facilities are completed, Savannah will have the largest integrated operation of its kind in the world, with the new Union Bag plant adding approximately 10 per cent to the present employment of 4,000.

## BenMont Papers Buys Adams Paper Plant

BENNINGTON, Vt.—BenMont Papers, Inc., well known converters of waxed papers, gift wrappings, and paper draperies, has purchased a controlling interest in Adams Paper Company, also a Vermont corporation located at Wells River. The Adams company manufactures high grade tissue papers in white and colors used in the jewelry trade and as gift wrappings. A large tonnage of the latter grade has been purchased by BenMont for the retail trade. George W. Bidwell will continue as manager of Adams.

★

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**American Anode latices and mixes**

*for coating and impregnating paper . . .*

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There has been so much recent progress in this field that it's doubtful if paper chemists and engineers have been able, in these busy days, to keep abreast of it.

There's ample evidence that in many cases we will be able to help you make a *better* product at a *lower* cost. Certainly, manufacturing will be simplified because water systems are inherently uncomplicated. They're materially safer, too; no dangerous explosive solvents; no cumbersome and expensive solvent recovery systems.

Latices and mixes of natural and synthetic rubbers, GEON, HYCAR, neoprene, and Saran are available from our bulk storage. For more information about the *modern* way to coat and impregnate paper, please write Department AD-7, American Anode, Inc., 60 Cherry St., Akron, O.

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## Dutch Paper Mills Need Machinery

WASHINGTON, D. C.—The Netherlands pulp and paper industry throughout the war period operated under German direction and as in other occupied countries, production of papers not essential to the wartime economy was largely curtailed or discontinued. Newsprint manufacture was substantially reduced. Emphasis was given to manufacture of printing and envelope papers as well as the heavier wrapping and bag papers, also paper board for shipping containers. Beginning in 1943, when production was about 75 percent of the country's capacity, imports of chemical and mechanical wood pulps were received by the Netherlands from Germany, Sweden, Norway, and a small amount of sulphate pulp from Finland. It is estimated that fully 60 percent of the Dutch paper and paper board production during the occupation years was exported to Germany.

Direct war damage to the pulp and paper industry in the Netherlands is estimated at approximately 20 percent of producing capacity. This includes three mills badly wrecked from bombing and another smaller mill burned. The Germans did considerable looting of machinery in pulp and paper mills. Electric motors and other power transmission equipment was removed and transported to Germany. Certain types of heavy machinery such as beaters, sections of paper machines, rewinders, and the like that were too large for hasty removal as complete units were in some instances deliberately broken up. The Dutch mill owners practiced many ingenious schemes for defeating the Germans in their attempt to cripple the industry, and thereby saved and kept intact the great bulk of their property. Nevertheless, considerable machinery for paper and paper products manufacture is required to put the industry in a satisfactory operating condition.

The industry resumed operation in August 1945, when imported wood pulps, principally from Sweden, were received. Coal, chemicals, and other paper making materials, especially waste paper, have been in short supply and by February 1946 operation was at about 40 percent of capacity. The industry continues to be handicapped through lack of coal and the much needed primary materials.

Before the war, the Netherlands annually imported 1,000,000 cords of spruce and fir pulpwood from Russia and Finland. No foreign wood shipments have been received since liberation. The principal concern importing this wood normally manufactures 50 percent of the paper output of the Netherlands. Inability to procure wood has made it impossible for this company to make its own mechanical and chemical pulps from which practically the entire newsprint production of the country was processed. Fabrication of newsprint from the imported pulp has not given satisfaction. It is hoped that imports of pulpwood from the Soviet Union can be arranged. In the meantime, efforts are being made to obtain Canadian pulpwood shipments during the last half of 1946. There is little home pulpwood available to the industry.

For 1946 the industry hopes to increase its imports of wood pulp to be obtained largely from Sweden. However, because of lack of sufficient raw materials and other factors restricting domestic paper production, import purchases in 1946 will include many essential paper and paperboard items needed to help restore normal economy. Wallpaper is in very short supply, and demand is several times that of normal consumption. There is a shortage of kraft paper for making cement, lime, and fertilizer bags. It is believed that United States export of kraft cement sacks will find an excellent market in the Netherlands for the next several years.

### Strathmore Veterans Return to Jobs

SPRINGFIELD, Mass. — Nearly two-thirds of the men and women who left Strathmore Paper company to enter the armed forces have returned to the company following their discharge, Henry D. Johnston, industrial relations manager, said today. Johnston said that of 116 former employes now discharged from the service, 74 have returned to work. In addition, the company has hired 35 veterans who were not employed there before they entered service. A total of 151 Strathmore men and women were in service.

Commenting on the high percentage of veterans who have returned to the plants, Johnston said that the company kept in close contact with its servicemen during the war, through letters and the company house organ.

He also paid tribute to the "fine cooperation which the company has had from Tekoa Lodge, No. 197, International Brotherhood of Paper Makers," which, he said, has been responsible for the return of many former employes.

### Eagle-A Stresses Lightness In Writing Paper

HOLYOKE, Mass. — The American Writing Paper Corp. in keeping with the modern trend toward greater use of lightweight heads for business correspondence, is distributing a portfolio featuring Eagle-A onion-skin paper. Handsomely bound in red plastic wire, it includes sample items of letterhead, file copy and second sheets, as well as commentary on the benefits of lightweight paper in postal economics and filing space and the greater use of air mail service in expanding world trade. Plain samples of all items in each grade are shown in swatch form.

## Robeson Addresses Neenah Rotary

NEENAH, Wis.—American soldiers have proved themselves the "finest ambassadors ever sent to Australia," according to C. A. Robeson, managing director of Australia Inter-Cellucotton, who spoke at a luncheon meeting of the Neenah Rotary Club July 11 at the Valley Inn. Mr. Robeson is visiting at the plant of the Kimberly-Clark Corporation.

"When your troops came," he said, "was the first time that Americans really were introduced in Australia. Before that all we knew about America was what we read in the papers, which feature the unusual happenings; the films, which are hardly typical of everyday life; and casual brief visitors. We learned to know ordinary American citizens and welcomed them in our homes.

"The Australian soldier may not have been so happy about it at first because of monetary differences. After battle, though, the Australian soldiers too were unanimous in their stamp of approval."

He praised the defensive stands in the Philippines, which meant so much to Australia. He called General MacArthur a magnificent man and fine soldier whose quiet confidence in ultimate success gained the respect of Australian troops.

He also termed President Roosevelt a great leader and the outstanding statesman of the war in the minds of the Australian people.

### Perkins Strike Averted With New Wage Scale

CHICOPEE, MASS.—The strike vote of the employes of the B. F. Perkins & Son, Inc., paper making machinery manufacturers, has been cancelled with the signing of the contract for a new wage agreement. The new scale calls for increases ranging from 10 to 40 cents an hour. The average raise is about 15 cents an hour, William F. Malone, local AFL organizer, said. He was negotiating for Federal Labor Union 23917, AFL.

The women will start at 60 cents an hour and the minimum pay for experienced women will be 65 cents an hour. The minimum man's pay has been set at 75 cents an hour with a starting rate of 70 cents.

There are two weeks vacations with pay and two paid holidays—Labor Day and New Year's. A 10-cent-an-hour differential on the second and third shift was granted and time and a half for Saturdays and double time for Sundays.

Judge Philip O'Brien of Holyoke and Judge Ralph Spooner of Springfield sat in on the conference as management's representatives. Ward Sullivan is president of the plant union.

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SUTHERLAND REFINER LIMITED, 515 DRUMMOND BLDG., MONTREAL, P.Q., Manufactured in Canada by The John Bertram & Sons Co. Ltd., Dundas, Ontario

## U. S. Envelope Going At Full Schedule

SPRINGFIELD, Mass., July 11—In sharp contrast with the rest of local industry is the status of the U. S. Envelope Company of Cypress Street which is currently enjoying 100 per cent production and is employing more than three thousand workers in its single shift, according to President E. V. Johnson.

The firm deals only in converted paper products such as stationery, paper drinking cups and toilet tissue, as well as supplying fully 25 percent of the envelope needs of the nation. Materials are hard to get, Johnson asserted, but in spite of these handicaps a gradual improvement is being noted in the industry as a whole. No opinion was ventured on the paper products picture for the next six months since fluctuating conditions demand continued changes.

A recently announced expansion program provided for three new factories to be built immediately by the firm in order to serve various sections of the country. One will be in San Francisco, another in Atlanta, Ga., while the third will be located in the Southwest. An addition to the Los Angeles division was completed during the past year, thereby doubling the facilities of that plant.

The income account for the year ending Dec. 31, 1945, revealed a net profit of $819,193, subject to adjustment reflecting negotiation of war contracts completed in 1945. This compares with a net of $791,230 in 1944.

### Byrne Returns to Boston Trade

BOSTON, Mass. — Robert Byrne, Senior Lieutenant in the Navy for four years, son of Matthew O. Byrne, treasurer of Whitney Brothers, Inc., dealers in paper, twine, bags and boxes, has just received honorable discharge and is with the sales force of the company.

Allan Byrne, another son, captain in the Army, and overseas five and one-half years, in Africa, Sicily and Italy, has been honorably discharged and has resumed charge of the waterproof department in the same position he held before the war.

### Holyoke Forces Back at Jobs

HOLYOKE, Mass.—Thousands of Holyoke paper mill workers returned to their jobs last week as the most extensive summer vacation in the history of this city's industries ended. Employes of Chemical Paper, Whiting Paper, Whiting Co., Marvellum, Valley, Newton and Kamket Corp. all took the week of the fourth off and were back this week. Franklin, American Writing Paper and Holyoke Mills, all of which abandoned work on the 3rd, returned on the 15th.

## Rayonier Sales Up 4 Per Cent

Rayonier Incorporated, the country's largest producer of dissolving pulps, reported sales for its fiscal year ended April 30, 1946 of $27,032,586, an increase of 4.1 percent over the previous year, according to the annual report by President Edward Bartsch.

Net profit before federal taxes was $2,075,379, against $3,624,319 in 1945, the decrease resulting from higher wood costs, wage increases, unusual expenses incidental to reopening the Shelton, Wash., mill which had been closed since 1943, and an abnormal amount of maintenance work deferred from the war period. After provision for federal taxes, the consolidated net income was $1,503,379, equal after dividends on the preferred stock, to 26 cents per share on the common stock, compared with 61 cents earned on the common in 1945.

In his comments to stockholders, President Bartsch pointed out that the Shelton mill was reopened using a process new to this country, a new grade of wood pulp was developed during the year and the company's extensive timber holdings were further increased. Report reveals that Rayonier supplied more than half of the rayon industry's wood pulp requirements.

The consolidated balance sheet as of April 30, 1946, showed current assets of $10,085,547 and liabilities of $2,443,284, a ratio of 4.13 to 1.

## Hoosier Trade Hopes To Avoid Inflation

INDIANAPOLIS—Demand for paper continued heavy during the last week with manufacturers and jobbers unable to fill orders. There yet is a large backlog of orders on file and from all indications there will be no slackening in the next few weeks. With the passing of OPA there has been a gradual rise in prices, but there has been no indication of a runaway increase in prices and every effort is being made on the part of all concerned to prevent inflation in the market.

Indiana publishers viewed with considerable alarm notification from Canada that newsprint prices were due for increases. Most of the larger publishers do not look for an immediate increase in either advertising or subscription rates. However, some say that any large increases in print prices will have to mean advances on their part.

Covers, ledgers and book papers continued in heavy demand with supplies strictly limited.

Demand for wrapping paper, bags and other similar items is showing some increase. Jobbers say there will be a continued shortage of these items for some time and that prices will increase slowly. Tissues were scarce this week, with toilet tissues particularly wanted and scarce.

Building paper and roofing continued to sell readily, with some slight price increases noted. However, it is doubtful if the demand will be as large as was thought earlier in the year, due to shortage of lumber and skilled labor.

Waxed paper and cellophane continued active.

Local waste paper jobbers report a slight decrease in mill buying due to a number of factors. However, there is no cause for worry, they say, and stocks in local warehouses remain low. Prices were being maintained at high levels.

Rag demand continued good with prices strong. It seemed that fine cuttings were most insistently in demand.

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**2.** *"A water shortage sold me* on Permutit. It looked as though the mill would have to shut down, until one of our chemists suggested Permutit equipment for *water* recovery. Water shortage doesn't bother us now. We use the same water over and over now, without loss of efficiency."

**WHERE DO YOU FIT IN?** Which of these mill operators reminds you of — *you?* If your water problem is one or a combination of these, there is help for you here at Water Conditioning Headquarters.

Permutit invites you to take advantage of its knowledge of paper mill water, born of more than thirty years' experience in the field of water treatment. Write for information to The Permutit Company, Dept. PT7, 330 West 42nd Street, New York 18, N. Y., or Permutit Co. of Canada, Ltd., Montreal.

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**ONE OF THE WAYS** in which Permutit helps the pulp and paper industry to control water quality is this White Water Reclaimer for the recovery of fibre and filler, permitting re-use of the water.

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## Norwood Revamps For Added Lines

FLORENCE, MASS.—Good progress is being made in remodeling the plant of the former Norwood Engineering company, now the Norwood Manufacturing & Engineering Company. The concern was bought by Edward and Aaron Krock of Worcester at an auction sale held May 31 and there has been much speculation since then on the future of the business and the plans of the new owners for it has long been an important industry in Florence and means much to this village.

Nathaniel P. Rand, president of the corporation, reveals that the new firm plans to continue manufacturing practically the same items as in past years, their principal output being paper making machinery and water purification equipment. They also plan to add other lines later.

Most of the machinery in the shop was installed years ago and this is being replaced with modern equipment of the latest type. Some of the new machines have been set up already and others are arriving almost daily. Each of the new machines will be an individually driven unit and this will do away with the network of overhead shaftings that have been necessary in the past.

The foundry is also being completely modernized with a cement floor and the installation of new machinery.

The entire shop is being streamlined to achieve the maximum of efficiency. All phases of production will be carried on on the first floor. The tool room which had always been located on the second floor is being brought down stairs, thus saving time and energy of the workmen going back and forth for tools. One partition on the first floor has been removed to make the working quarters much lighter as well as more convenient.

After the alterations have been completed, it is planned to paint the interior of the entire shop a light green and to sand blast the exterior of the building.

In time, President Rand stated, the firm hopes to increase its personnel, but at present is too busy remodeling to think of expanding.

## New Hardinge Catalogue Lists Paper Equipment

Thickening, clarifying, and agitating equipment are covered in a new sixteen-page bulletin issued by the Hardinge Company, Inc., of York, Pa., manufacturers of a complete line of equipment for mines, process industries, and rock products plants.

The catalog, which is well illustrated, covers the complete line of Hardinge thickeners, clarifiers, and agitators which includes tray thickeners, "Auto-Raise" Thickeners, Rectangular Clarifiers, Circular Clarifiers, Agitators, Hydro Classifiers, Hydro Separators, Counter-Current Classifiers, and Automatic Backwash Sand Filters. Two tables are included in the bulletin, which give data on specific thickening and clarifying operations.

## Bulletin 1068 Treats of Motor Controls

"Selection and Application of Synchronous Motors and Synchronous Motor Control" is a two-color, 24-page booklet with over 50 illustrations, of which more than half are diagrams or tables. A comprehensive treatment in simple language of operating characteristics, power factor, torques, flywheel effect, speeds, excitation, starting KVA, braking, motor protection, five principal types of control, with some fundamental considerations of costs. Publication No. 1068, describing these subjects, is published by Electric Machinery Manufacturing Co., Minneapolis, Minn.

## Warren Steam Pump Names O'Brien Agent

WARREN, Mass. — Warren Steam Pump Company, Inc., manufacturers of centrifugal and reciprocating pumps, announce the appointment of O'Brien Specialty Company, Syracuse, N. Y., as authorized agent for upper New York State. William J. O'Brien, president of O'Brien Specialty Company, has been established as manufacturers' representative since 1920 and is well and favorably known in the equipment field. He was district deputy of the National Association of Power Engineers in upper New York State for two years and member of Program and Lectures Committee of Technology Club of Syracuse.

## Albany Felt Opens Branch In Berkshire Area

HOOSICK FALLS, N. Y., July 13—A branch plant has been opened here by the Albany Felt Company which will employ about fifty persons in its local operation. The company has leased a building on John Street formerly used as a warehouse and has modernized it. The decision to start operations in this village followed several weeks of preliminary activity and surveys of the neighborhood. Plans call for the employment of a small force at the start with this number being gradually increased. John C. Standish, general superintendent and George Baggett, personnel manager, were in this territory several times in recent weeks carrying on negotiations for leasing the building besides seeking help for the new branch. The renovations and alterations to the structure were carried on under the supervision of George Estabrook, plant engineer of the company. It was stated that Irving Fisher, of Albany, will be assistant superintendent of the plant.

## Ashcroft Thermal Protector Prevents Excessive Heat

A new Ashcroft Thermal Protector, a thermocouple actuated limit switch, offers protection from excessive temperature. To date, the switch has proven useful in air ducts on industrial ovens, dryers, bearings of large motors, blower wheels, flue gas stacks of boilers, etc. The temperature chosen as the high limit is set by an operating knob located inside the case where it can not be tampered with. If this temperature is reached, the device will stop the apparatus to sound an alarm or light a light. In addition, the device will "fail safe" in case of burning off or breaking of thermocouple, failure of power supply, tube or mercury switch. Further information may be obtained by writing to the manufacturer, Manning, Maxwell & Moore, Inc., Bridgeport, Conn.

## Package Machinery Union Votes for Saturday Work

SPRINGFIELD, MASS.—Continuation of working Saturdays for half a day was favored by members of the Package Machinery Company union, CIO, at a special meeting held at the Springfield Turnverein. Leo N. Messier, president of the union, said 74 votes were cast in favor of the issue, while 30 indicated opposition. The action does not affect the night shift which is now working five nights a week. It was pointed out that the Saturday working period, which covers five hours, is on a time-and-a-half basis and is included in the 50-hour week schedule of day employes.

## Paul Torre Returns to DeZurik Shower Company

SARTELL, MINN.—Paul Torre, who before the war covered the middle west and southern territories as sales engineer for the DeZurik Shower Company, has returned to act in the same capacity in the middle west and eastern territories. For almost three years duing the war he served in the chemical and mechanical laboratories of the U. S. Signal Corps at Fort Monmouth, N. J. and the radar center, Camp Evans, N. J.

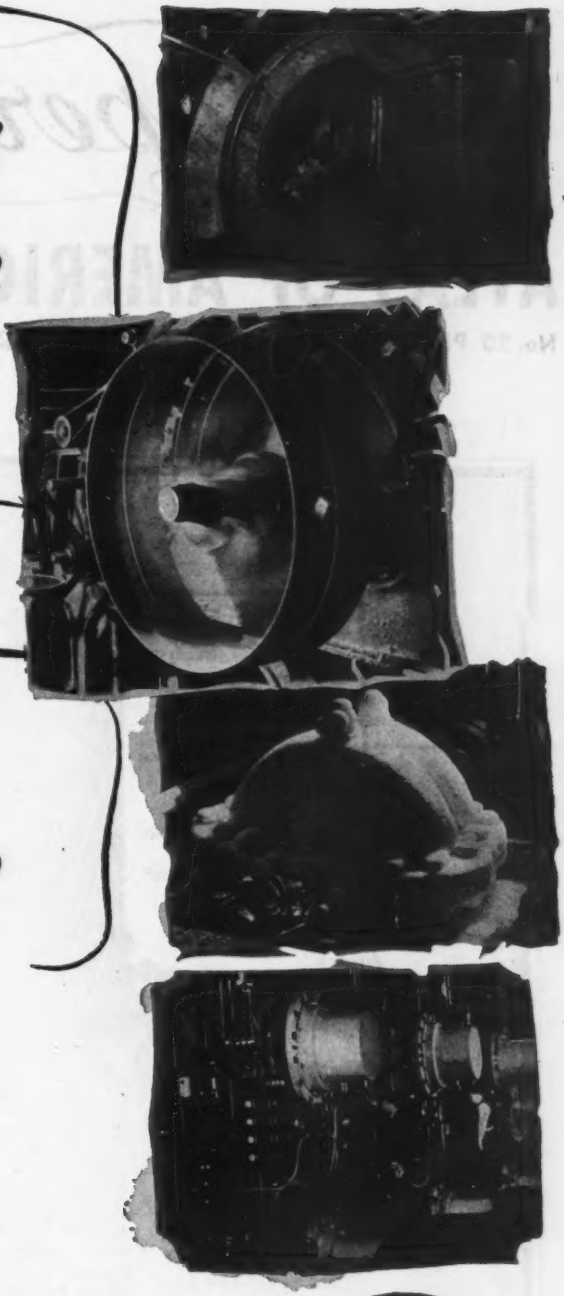
## Electric Machinery Appoints Ranson

Electric Machinery Manufacturing Company, Minneapolis, specialists in electrical power apparatus, has appointed Russell Ranson, 116½ East Fourth Street, Charlotte, N. C., as sales representative for North Carolina and South Carolina.

## Valley Iron Wks. Erects Quonsets

APPLETON, Wis.—The Valley Iron Works Company is erecting two quonset huts for warehouse use on property south of its main office, leased from the Chicago & North Western Railway Company.

# "Bearings RUN 10% COOLER



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Draper's

# ATLAS OF AMERICAN PAPERMAKING

**No. 20 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS**

*Map copyright by L. D. Post, Inc., New York, N. Y. American Map Co., New York, N. Y.*

**HIGH LIGHTS:**

Papermaking took root in Indiana in 1826, when Isaac Mooney, formerly a papermaker of Ohio, started a two-vat handmade paper mill. The site was some twelve miles north of Madison on the Big Creek. Today the State ranks 17th in the production of paper in the United States. Its varied output runs to boards. Twenty-eight of its paper machines are cylinders and three Fourdriniers.

Being a distinctly agricultural State, it is not surprising to note that straw is used in papermaking at six out of Indiana's eighteen mills. While no "fine" papers are made, the seat of one of the earliest greaseproof and glassine mills in the country is at Hartford City and one of the largest producers of clay coated boxboard is at Elkhart. One of the few sources for blanks, bristols and similar specialties west of the Alleghenies is in Indianapolis.

As can be observed from the map, the distribution of paper mills throughout the State is exceptionally even, and from a sales point of view, they have access to many of the largest markets.

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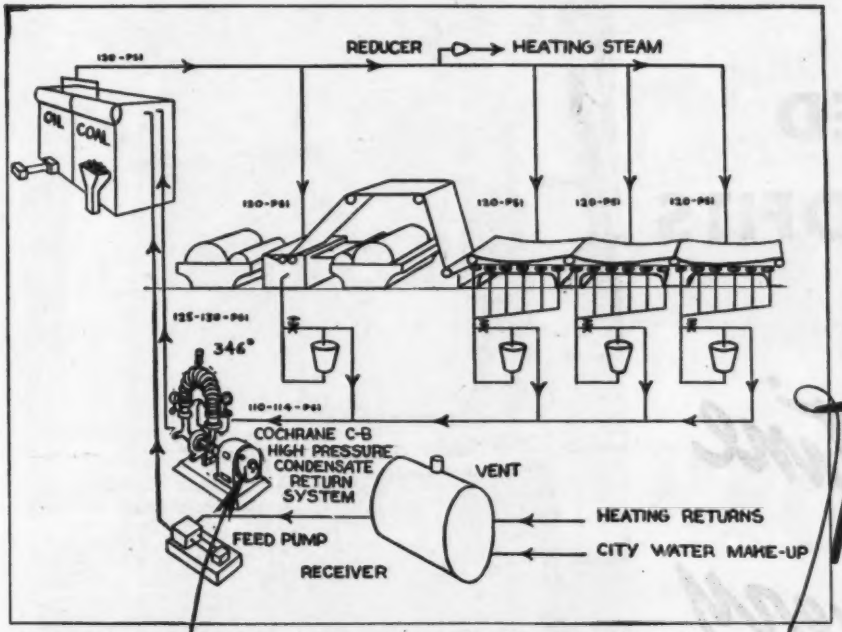


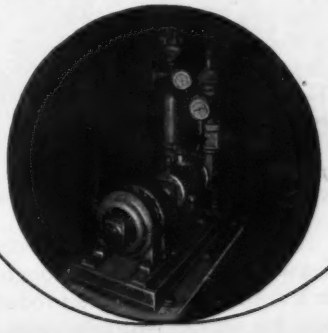

*Schematic diagram of C-B System draining corrugator rolls and combining plates and returning condensate to boilers.*

*this unit gives*

**FASTER OPERATION**

**INCREASED PRODUCTION**

**FUEL SAVINGS**



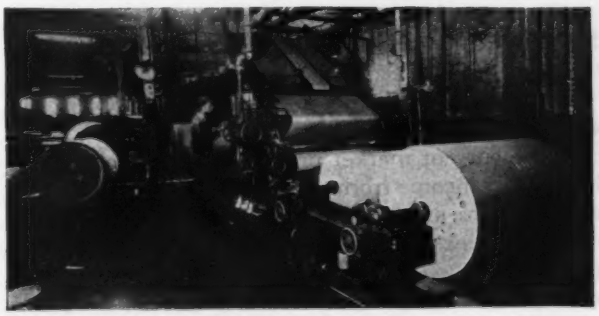
*Location of C-B jet loop pump.*

In this typical paper box mill a Cochrane C-B High Pressure Condensate Return System drains the corrugator rolls and combining plates so efficiently that they operate at high temperature uniform heat, resulting in increased speed and higher output.

Operating speed of the equipment shown in the illustration has been increased 25% to 100% depending on the type of board. Condensate is removed from the rolls and plates of the equipment at 110 psi to 114 psi with temperatures as high as 346° F.

This uniformly high temperature naturally permits faster operation, increased production., less rejects and proportionate fuel savings from the retention of heat in the condensate. In an open or vented hot well this heat would automatically be flashed off or lost in the cooling down to 210° F.

Write for a copy of Publication 3250 and list of paper companies equipped with the C-B System.



*65-hp corrugator machine drained by C-B System. Combining plates in background.*

**COCHRANE CORPORATION**
**3103 North 17th Street**
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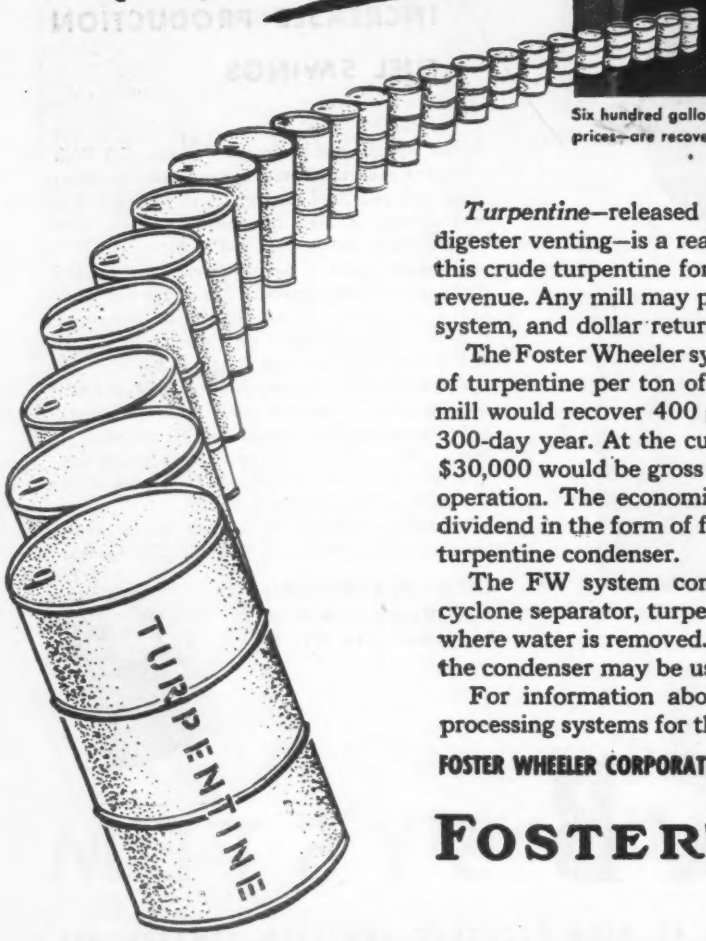
# COCHRANE C-B SYSTEM

**CONDENSATE RETURNED TO BOILERS AT HIGH PRESSURE AND HIGH TEMPERATURE**

# ADDED MILL PROFITS *from* Turpentine Recovery

Six hundred gallons of turpentine daily—worth $45,000 at present market prices—are recovered by this system installed in a Southern sulphate mill.




*Turpentine*—released in vapor form through sulphate pulp digester venting—is a readily marketable product. Recovery of this crude turpentine for subsequent sale produces added mill revenue. Any mill may profitably install a turpentine recovery system, and dollar return is easy to figure before installation.

The Foster Wheeler system recovers approximately 4 gallons of turpentine per ton of pulp produced. Therefore, a 100-ton mill would recover 400 gallons daily . . . 120,000 gallons in a 300-day year. At the current market price of 25¢ per gallon, $30,000 would be gross income from the system for 300 days' operation. The economics are simple—added revenue *plus* a dividend in the form of fuel saved through heat recovery in the turpentine condenser.

The FW system consists of three essential elements – a cyclone separator, turpentine condenser and gravity separator where water is removed. Heat absorbed by circulating water in the condenser may be used elsewhere in the mill.

For information about this—and other modern economic processing systems for the paper industry—address

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***Excellent new-type papers made from bleached groundwood produced by the Du Pont Peroxide Bleaching Process meet a wide range of market needs.***

**"HIGH STANDARDS** for paper can easily be met with bleached groundwood paper," reports a St. Regis Paper Company official. "For the past five years, we've been supplying uncoated paper for Fortune Magazine and other users, made with bleached groundwood pulp produced by the Du Pont Peroxide Bleaching Process at our Norfolk, N. Y., mill. This paper has proved so successful that we plan greatly expanded production of bleached groundwood with the Du Pont process, using St. Regis developments and facilities made available by our $5 million mill expansion project nearing completion at Deferiet, N.Y.

"Blended with other pulps, or used principally by itself, bleached groundwood pulp can be converted into an extremely wide variety of new-type printing and specialty papers. These papers have good bulk, opacity, brightness, softness and resilience. They print uniformly with little tendency to fuzz or lint. And, using groundwood pulp bleached by the Du Pont process, papers of the same brightness as other types can be made for less cost, brighter papers can be made for no added cost, and considerably better papers can be produced for slightly higher cost."

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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

## Paper's Kaleidoscope

By one of those curious turns of events that so often produce results that make headlines far larger than the cause itself, newsprint prices generally moved upward this week as the natural consequence of an act of the Canadian Government. When Ottawa decided that, to protect the value of Canadian currency it should be pegged at par in its exchange value for United States dollars, a large and substantial portion of Canada's industry immediately was pinched seriously. The United States dollar no longer was worth $1.10 in Canada; $67 newsprint on this side of the border no longer sold for $73.70 above it, and Canada's vast paper and pulp industries were faced with a loss of revenue in their own money. The natural step followed: an adjustment was made to restore the lost revenue.

What the future may have in store is a subject for open speculation. Well-informed circles have it that strong representations were to be made for further increases under OPA sanction, supported by figures reflecting labor costs, freight costs, and the like. These costs still have to be met somehow. The present stage of the movement is a simple reflection of what can happen when the value of money, in terms of its purchasing power, can be and is changed from any reason whatsoever.

All of this adds up to confusion which the paper mills desire no more than do their customers. Only the other day a special paper committee of the National Association of Purchasing Agents made public the results of studies that it had made into the chief varieties of paper, and, with each class of paper assigned to a member whose own operations had made him intimately familiar with it, only the most general conclusions could be drawn by this committee. To add to the general confusion, it reported, some paper mills have closed entirely for summer vacations and for repairs. This has caused customers to scramble around for other connections to take care of their immediate needs until regular sources resume operations.

As to newsprint, some publishers, the report finds, have favored the removal of price control. This group contends that prices would probably increase by about ten percent by the first of the year, but the higher price would be an incentive to increase production. It should be sufficient, in their opinion, to cause many mills to make extensive capital investments to increase output. It possibly could, they say, cause some of the mills, that formerly made newsprint, to reconvert that product.

There are lots of people pricing themselves out of markets, the committee finds, and some paper men have sensed this danger too. While the way out may look like the primrose path, the way back to such lost markets is nothing but a bed of thorns. There is no law, however, that prevents a person from doing it the hard way.

Fine papers, already in extremely short supply in the market, are being further restricted by production losses, resulting from current shutdowns for vacations. This seems to be a two-week affair at most mills, with some employees being given longer vacations.

Sulphite grades are so restricted that former carload buyers can only secure this item in 2 to 5 thousand pound lots. Priced at this bracket, the carload buyer finds that sulphite in these small lots is costing him almost as much as the 25 percent rag he buys in carload lots. The question of why buy sulphite when one can get 25 percent rag for the same price becomes pertinent and there is only one answer to that.

The situation in connection with the "supply" and "demand" of kraft paper does not seem to change very fast, but there do seem to be some elements appearing on the horizon that may provide a different picture in the near future.

The continuing developments in connection with the sales of various kraft producing mills is almost certain to cause a radical change in the line-up of supplier and buyer relations and, until new producing mills start getting out their production, there will probably be considerable scrambling until such time as supplies catch up with the demand, the report declares, and then goes on:

"Unless one has kept a complete record of the changes in the mill situation, it would seem to be quite difficult to set up figures which would show the losses to commercial distributors of tonnage and what the possible increases are going to be from new mills. Possibly some kind soul in the paper trade will endeavor to set down those changes which have been made in mills producing for public distribution and which now will produce, at least the largest percentage of their production, for their private owners. Included should be the mills which have changed from paper to board production and vice-versa."

### Calendar of Coming Events

**September 26-28, 1946—TAPPI General Fall Meeting, Hotel Statler, Detroit, Mich.**

**October 2-4, 1946—TAPPI Engineering Conference, Pfister Hotel, Milwaukee, Wis.**

**October 17-19, 1946—National Paper Trade Association. Fall Convention, Edgewater Beach Hotel, Chicago, Ill.**

## New TAPPI Members

The Technical Association of the Pulp and Paper Industry has elected the following to membership:

Edmund P. Arpin, Jr., President and Sales Manager, F. A. Leavens & Co., Inc., Neenah, Wisconsin. Attended the University of Wisconsin.

Francis O. Boylon, Superintendent of Production, Marinette Paper Co., Fort Edward, New York, a 1934 graduate of the University of Michigan.

Hérvé Bourque, Assistant Chemist, Canada Paper Co., Windsor Mills, P. Q., Canada.

Raymond T. DePan, Paper Engineer, The Flintkote Co., East Rutherford, New Jersey, a 1940 graduate of the New York State College of Forestry.

John J. Goss, Chemical Engineer, Gaylord Container Corp., Bogalusa, Louisiana, a 1937 graduate of Louisiana State University.

William J. McCarthy, Pressman, News Syndicate Co., 220 East 42nd St., New York, N. Y.

Howard H. Parker, Technical Service Engineer, Hercules Powder Co., Paper Makers Chemical Div., Kalamazoo, Michigan, a 1940 graduate of the University of Michigan.

Dalton L. Pollet, Chemical Engineer, Gaylord Container Co., Bogalusa, Louisiana, a 1936 graduate of Louisiana State University.

Inman D. Tharp, Chemical Engineer, Paper Manufacturers Co., 5th & Willow Sts., Philadelphia, Pennsylvania, a 1937 graduate of the Drexel Institute of Technology.

Jack E. Weaver, 165 Durston Ave., Syracuse 6, New York, on terminal leave from the United States Army, a 1942 graduate of the New York State College of Forestry.

## Production Ratio Report*

(Production as per cent of six-day capacity)

### COMPARATIVE WEEKLY SUMMARIES

| Current Weeks—1946 | | Corresponding Weeks—1945 | |
|---|---|---|---|
| June 1 | 96.3 | June 2 | 87.9 |
| June 8 | 104.0 | June 9 | 92.8 |
| June 15 | 104.0 | June 16 | 91.5 |
| June 22 | 106.2 | June 23 | 90.4 |
| June 29 | 105.5 | June 30 | 88.8 |
| July 6 | *61.1* | July 7 | 47.9 |

### COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1945 | 86.7 | 89.4 | 90.2 | 88.1 | 89.8 | 91.2 | 80.8 | 88.6 | 90.2 | 95.9 | 95.5 | 91.0 | 89.7 |
| 1946 | 94.7 | 98.4 | 104.4 | 102.7 | 100.7 | *104.6* | | | | | | | |

### COMPARATIVE YEARLY SUMMARIES

| | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|---|---|---|---|---|---|---|---|---|
| Year to Date .... | 78.6 | 86.6 | 92.8 | 96.8 | 87.5 | 87.2 | 87.9 | 99.5 |
| Year Average ... | 83.4 | 85.6 | 97.4 | 90.4 | 87.8 | 88.1 | 89.7 | |

### PAPERBOARD OPERATING RATIOS†

| Current Weeks—1946 | | Corresponding Weeks—1945 | |
|---|---|---|---|
| June 1 | 85 | June 2 | 93 |
| June 8 | 96 | June 9 | 97 |
| June 15 | 98 | June 16 | 96 |
| June 22 | 97 | June 23 | 96 |
| June 29 | 98 | June 30 | 96 |
| July 6 | *70* | July 7 | 62 |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1945 | 91 | 95 | 97 | 97 | 96 | 96 | 86 | 90 | 91 | 97 | 95 | 85 | 93 |
| 1946 | 90 | 97 | 100 | 99 | 94 | 97 | | | | | | | |

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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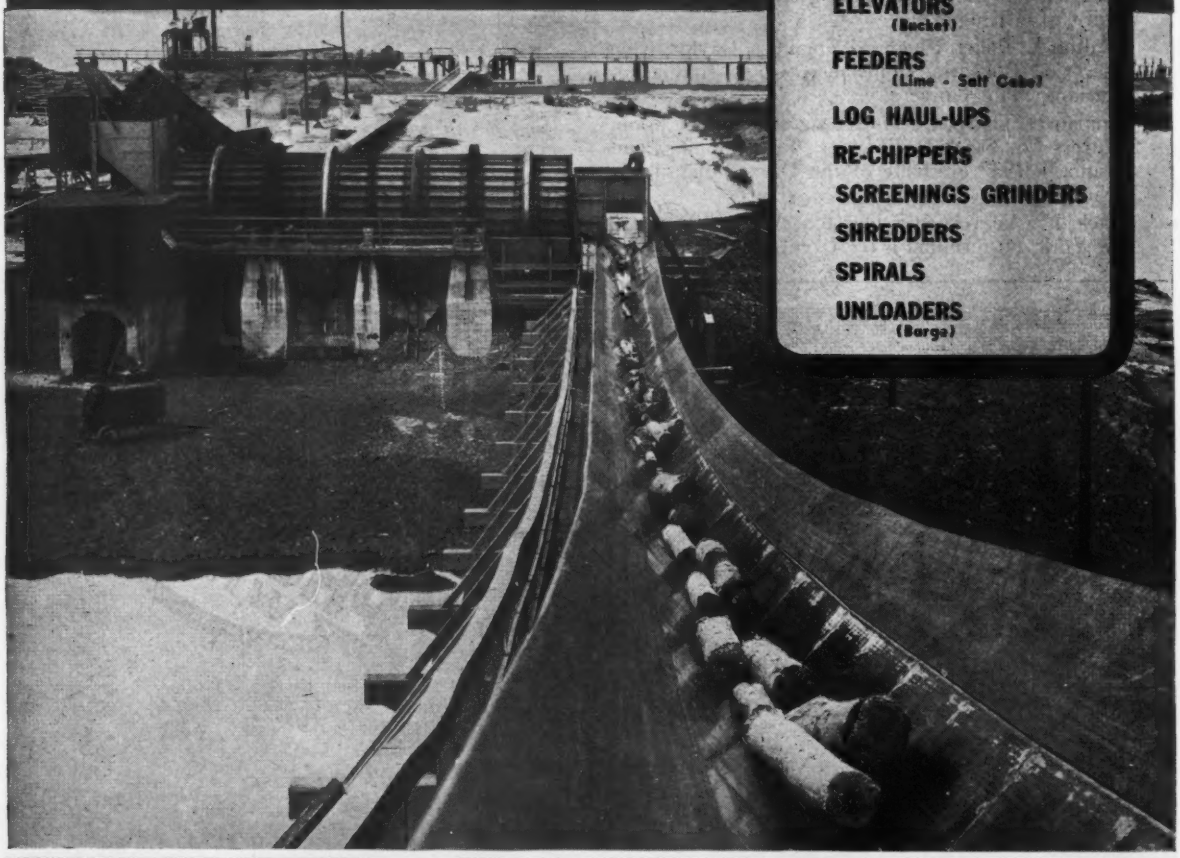
- LOG HAUL-UPS
- RE-CHIPPERS
- SCREENINGS GRINDERS
- SHREDDERS
- SPIRALS
- UNLOADERS (Barge)



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Edited by R. G. Macdonald, Secretary

# A Modern Continuous Beating and Refining System*

By D. Manson Sutherland[1]

## Abstract

*In a modern continuous beating and refining system in which both actions are accomplished in a single unit applicable to all papermaking fibers, the customary distinction between beating and refining is not drawn and the combined effect is judged by the properties of the finished product.*

*The action of a modern single rotation disk refiner is described and illustrated, accompanied by explanations of the control of freeness by varying inlet pulp pressure and the use of recirculation, both in a single unit directly behind a small paper machine and in a group of units operating in parallel behind a large machine.*

*The effect of various factors on control of freeness is discussed, including the influence of disk speed, disk pressure, inlet pulp pressure, power input, coarseness, consistency, recirculation, and disk wear. Factors affecting power input are briefly reviewed. The effect of beating and refining on the size and shape of particles and their influence on papermaking is discussed and illustrated with particular reference to the influence of consistency on the wire upon formation and sheet properties.*

*In conclusion the author points out changes in characteristics of fiber because of changes in wood species pulped and stresses the advantage of continuous refining as the supply of skilled beatermen dwindles and the speeds of papermachines increase.*

The papermaking industry uses the terms "beating" and "refining" as though they were two separate operations. In support of this contention reference is made to "The Manufacture of Pulp & Paper *(1)* in which beating and refining are covered under separate headings although it is stated in the introduction that "Modern developments in stuff preparation have blurred the formerly sharp distinction between beating and refining." Attention is called to beating as a batch process and refining as a continuous process although exceptions to both are noted. Even some continuous systems now in use still separate the function of beating from that of refining apparently in deference to the old conception that the functions are different. Perhaps it also caters to the idea that the papermaker needs a "tickler," usually one or more conical refiners, to give him last-minute control of freeness before putting the stock on the wire.

Continuous systems using jordan refiners as in the Southern kraft board mills often use the terms "hydrating" and "cutting." Primary jordans have wide bars for hydrating and finishing jordans have narrow bars for cutting. An attempt has thus been made to produce a beating effect in the primary jordans and a refining or cutting effect in the finishing jordans. Once again the functions of beating and refining are separated.

Generally speaking, beating, whether batch or continuous, has been used to reduce the coarseness of the fibers, thus increasing both hydration and slowness to a point where the desired stuff properties on the paper machine wire can be obtained by a final treatment in a conical refiner. In a modern, continuous beating and refining system the beating and refining actions are accomplished in one unit, therefore, no distinction is made between the action of beating and refining. The results of the combined treatment are judged by their effect on the properties of the processed pulps and consequently on the finished papers or boards.

The objective of any batch or continuous beating and refining system is to fibrillate the fibers thus increasing their surface area and producing wetness or slowness. Some reduction in fiber length must occur according to the degree of fibrillation produced. In modern papermaking it is not economical to make long fibered pulps and then shorten the fibers to meet the requirements of any given finished sheet. In recent years special pulps made from hardwoods with much shorter fibers than normal kraft and sulphite pulps have been successfully used with considerable savings in power. Generally speaking, the greatest differences in grades of paper lie in the furnish, as the same beating and refining treatments are used in all grades with only a difference in degree of processing according to the grades being made.

Claims are made that a batch system is the best because it is more flexible although more costly to operate and subject to greater variation in the end product. Practically all papermaking fibers can be processed in beaters while blending of different fibers, coloring, and sizing are easily controlled. The question arises as to whether these features can be incorporated in a continuous system.

Except in the case of mills which operate only on one grade of slush pulp, such as kraft for liner board

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Member TAPPI; President, Sutherland Refiner Corp., Trenton, N. J.

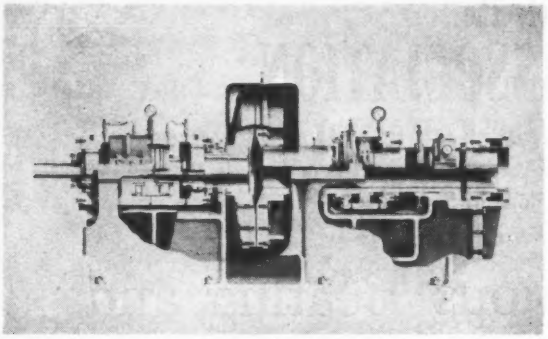

FIG. 1

and paper, it is necessary in a continuous system to use some means for breaking down laps and blending various grades of pulp and broke together. There are many types of equipment available for these purposes although some mills have modified their beaters for use as breaker beaters or mixers by removing the beating tackle and substituting suitable propelling devices.

Continuous refining with conical machines such as jordans is well known and used on many grades of board and paper but more recent developments of continuous refining with one rotating and one stationary disk have not been published.

The author has published papers on disk refiners and disks *(2, 3, 4, 5, 6)* which disclose the basic principles underlying their operation. Over a period of years the validity of these principles has been confirmed repeatedly but commercial experience has shown the advantages of some modifications in disk design and in operation. For the sake of clarity it is desirable to repeat some data given in previous papers.

### Continuous Disk Refiner

Figure 1 shows a cross section of a unit with 42-inch disks which is capable of refining from 30 to 60 tons per day depending upon the furnish and freeness required for a given sheet. There is one rotating and one nonrotating disk. Slush pulp, varying in consistency from 3 to 4.5%, is pumped into the inlet tube at pressures varying from 5 to 20 p.s.i. The speed of the rotating disk ranges from 360 to 514 r.p.m. depending upon the current characteristics of the mill and the motors available. The nonrotating end is set up at a suitable hydraulic pressure and mechanically locked so as to reach an input kilowatt reading previously determined as giving the necessary refining action for the grade in question. Normal changes in freeness are obtained by raising or lowering the inlet pressure and not by readjusting the setting between the disks.

Raising the inlet pulp pressure increases the throughput, raises freeness and lowers input power whereas lowering the inlet pulp pressure has the reverse effect. With recording inlet pulp pressure gages and kilowatt meters, it is possible to have a close check on refiner performance in relation to sheet qualities. One paper machine producing book, bond, writing, and other specialties at a rate of approximately 35 tons per day has one 42 inch refiner installed for all stock preparation.

The blended furnish is pumped up to a regulator for controlling weight and consistency. The regulated stock flows from the regulator through a head box compartment to the refiner supply pump, then through the refiner and back into another compartment in the same box. The refined stuff overflows into the last compartment which discharges into the fan pump. Refined pulp in excess of machine requirements overflows into the intake of the refiner supply pump. A bypass is placed in the line between the supply pump and the disks as a means of regulating the inlet pressure to the disks. The bypassed stuff is returned to the supply pump intake and mixed with the regulated stock. For example, on a paper machine producing 35 tons per day the disks are so designed as to give a throughput of 50 tons. The excess over machine requirements (i.e. 15 tons/day) is returned to the refiner supply pump where it is mixed with the regulated stock and is recirculated.

It has not been found practical to synchronize the capacity of a disk refiner with the production of the paper machine and at the same time maintain the freeness necessary for a given sheet. Furthermore, the paper machine may be speeded up or even slowed down at times. The output of refined pulp must be flexible within the normal variations of paper machine speeds. Recirculation of approximately 20% of the stock will take care of minor variations in furnish and most changes in pulp demand due to changes in paper machine speeds. In one system no machine chest is required and only a small quantity of stock is held in the pipe lines, refiner, and head box, consequently any change in inlet pulp pressure is reflected on the paper machine wire in 15 to 30 seconds. This system has been in operation over three years giving complete satisfaction to the mill operating personnel.

In another system the refiner supply chest is kept at a constant level and the stock is pumped to a header which supplies the disk refiners. The header pressure is regulated by a bypass line. The inlet pressure to each refiner is controlled by a valve. An electrical pressure switch is placed between the inlet valve and refiner to protect the disks against failure of stock supply. A similar protection is provided for the lubricating system.

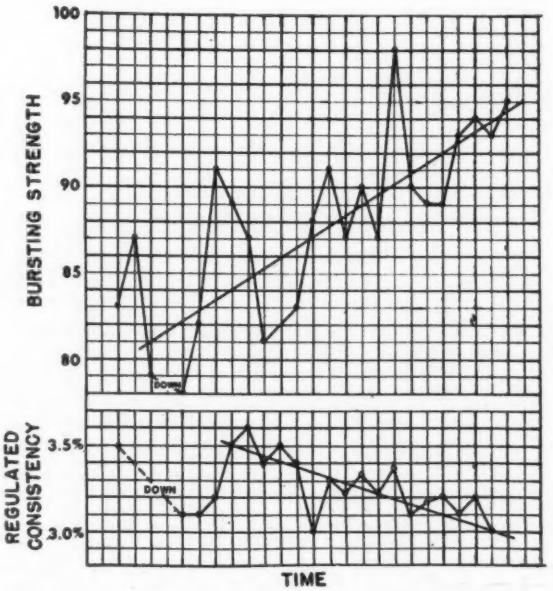


FIG. 2

| % Cons. | GPM. Per Lb. Stock | Relative Volumes |
|---|---|---|
| 3.0 | 5.54 | 1.000 |
| 3.5 | 4.75 | .857 |
| 4.0 | 4.15 | .750 |

The discharge from each refiner drops into a flume. The amount of stock required to keep the machine chest full is regulated at a gate and the excess of refined stuff overflows a dam and is returned to the refiner supply chest near the intake to the refiner supply pump.

An overflow from the machine chest to the supply chest is provided in case it is necessary to take the stock off the wire before gate can be closed. This prevents spilling of pulp due to flooding the machine chest. Size is run into the supply chest and alum into the machine chest which should contain not more than enough stock for 10 minutes' operation.

### Operation

The method of operation is to start up all refiners with a clearance between disks of approximately 0.125 inch. The refiner supply pump is started and, in turn, the inlet valve to each refiner is opened and as soon as stock appears in the discharge flume a suitable hydraulic pressure is applied to close the disks until, after the disks have been mechanically locked, the desired kilowatt reading is obtained.

After all units have been set up as described, the inlet pulp pressures are adjusted so as to give the discharge freeness required. When changing to heavier weights the inlet pressure may be raised to increase the throughput and thus deliver a freer stuff if desired. Lowering the inlet pulp pressure lessens the throughput and therefore slows the stuff. Any increase or decrease in inlet pressure is immediately reflected on the kilowatt or ampere meter. After the original hydraulic setting up and mechanical locking, the operator normally controls the slowness by varying inlet pressure. In a modern continuous disk refining system conical refiners are not needed to give the final touch to the stuff as is customarily the case with an installation of beaters and jordans.

### Control of Freeness

Uniform control of freeness has been effectively realized in continuous disk refining. The factors involved are as follows:

1. Disk speed, 2. disk pressure, 3. inlet pulp pressure, 4. consistency, 5. power input, 6. coarseness, 7. recirculation, and 8. disk wear.
In earlier papers on this unit emphasis was placed on: 9. Length of bars, 10. width of bars, 11. angle of bars, 12. width and depth of cells or grooves, and 13. impact inches (inch cuts).

The latter factors have been more or less standardized for the past five years and changes that have been made are not especially relevant to this paper. It can be said, however, that impact inches or inch cuts are purely mathematical concepts and in any beating or refining equipment it is necessary to distinguish between effective and ineffective impact inches. In other words, high impact inches or inch cuts do not in themselves give high efficiency but, on the contrary, may result in waste of power and overall inefficiency.

1. *Speed.* Constant speed motors are used varying from 360 to 514 r.p.m. depending on local mill conditions.

2. *Disk Pressure.* A maximum of 300 p.s.i. is used in the hydraulic cylinder consequently a disk of 42 inch diameter will have a maximum pressure of 32 p.s.i.

3. *Inlet Pulp Pressure.* Inlet pressures of less than 5 p.s.i. cannot conveniently be used because the electrical pressure switch cuts out at 3 p.s.i.

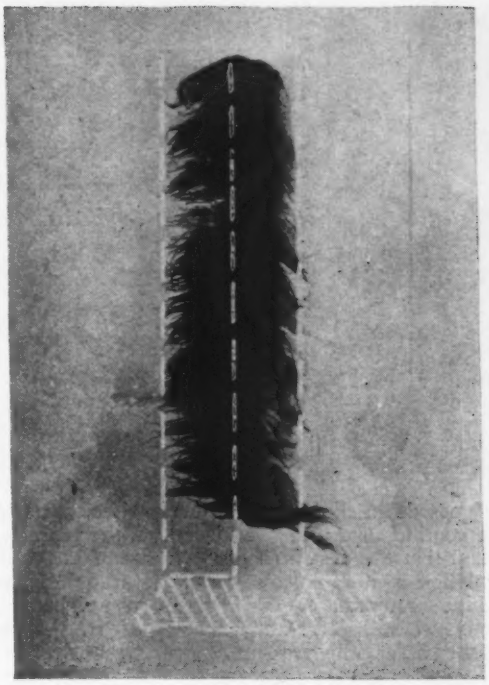

Fig. 3

The maximum pressure should not exceed 18 p.s.i. The control of freeness by inlet pulp pressure is very sensitive and provides an easy and inexpensive means for this control. Generally speaking, freeness increases as the inlet pressure goes up and slowness is developed when the pressure goes down. This has already been referred to but the sensitivity of this control must be emphasized. One example is given:

TABLE I

| Kraft pulp 3% consistency | Incoming freeness 680 ml. |
|---|---|
| Inlet pressure | 8 p.s.i. 14 p.s.i. |
| Green freeness | 365 ml. 515 ml. |

4. *Consistency.* Pulp consistencies range from 3% for long fibers to 4.5% for short fibers. Higher consistencies are not practical when operating directly behind a paper machine.

Effect of Consistency. As already pointed out a continuous refiner disk has definite areas through which the pulp passes and the frictional properties of the pulp have a definite relation to the problem of controlling freeness and quality of the sheet (see Table III).

A continuous refiner must be designed to refine all grades of fibers from many different species of wood and experience shows that a critical consistency range exists for the optimum refining effect on a given furnish. This is largely a matter of a few trial and error tests on a mill scale. As an example, a commercial run on southern kraft pulp is shown where consistency was reduced from 3.5 to 3.0% over 19 hours. The bursting strength at the reel as well as consistency readings were taken from mill records (Fig. 2).

Regulation. A weight and consistency regulator is placed ahead of the continuous refiner and, in the event of speeding up or slowing down the paper machine, more or less stuff is admitted into the refining system by adjusting the regulator gate. Naturally, if the production goes up, the percentage of stock recirculated goes down, whereas if the produc-

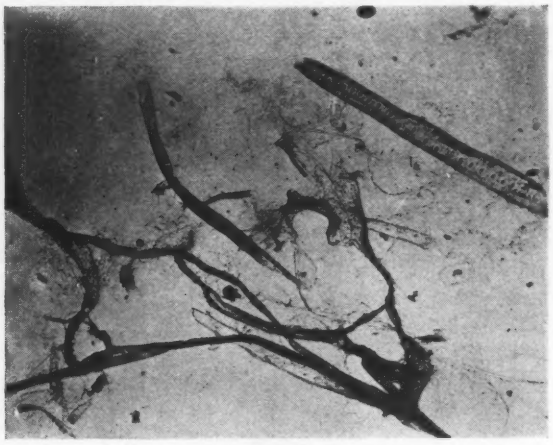

FIG. 4

tion goes down the percentage recirculated goes up. In a continuous refining system, it is therefore important that the design of disks be such that the recirculation is large enough to take care of the paper machine requirements for changes in weights and grades yet still permit the control of freeness by adjusting inlet pulp pressure.

5. *Power.* Disks of 42 inch diameter with single rotation require up to 300 hp. depending upon capacity and slowness required. Any increase over 300 hp. will not produce much more slowness but will shorten the disk life due to excessive wear.

With the above factors in mind, it will be seen that the control of freeness is mainly obtained by regulating the inlet pulp pressure and consistency since the speed and available hydraulic pressure are constant. An example of a 42 inch single rotation continuous refiner as described operating on southern kraft pulp can be given: raw pulp freeness 720 ml. Green, consistency 3%.

TABLE II

| Capacity, tons/day | Inlet Pressure | Freeness (Green), ml. |
|---|---|---|
| 25 | 7 | 300 |
| 35 | 10 | 500 |
| 45 | 15 | 600 |
| 50 | 18 | 660 |

In order to maintain uniform freeness, it is essential to have stock pumped to the continuous refiner at a uniform consistency. The refining action between the disks is obtained by the frictional resistance of the pulp passing through as well as by the effect of disk pressure. Continuous refining disks have definite groove areas which, in addition to speed and consistency, limit the capacity of the refiner on a given grade.

6. *Coarseness.* The effect of fiber length or coarseness on throughput for a typical disk design, inlet pressure, and speed is shown:

TABLE III

| Fiber Lengths, mm. | Throughput, tons/day |
|---|---|
| 3.5 | 50 |
| 2.5 | 75 |
| 1.5 | 90 |
| 1.0 | 100 |

Obviously the degree of refining effect cannot be maintained constant when throughput varies so much. This difficulty is overcome by increasing the consistency as the coarseness decreases. The throughput will then be more uniform for all fiber lengths and coarseness and, consequently, the degree of refining will also be more uniform.

7. *Recirculation.* The production of a paper machine varies according to grades and weights and is also affected by the condition of wires and felts. Since a continuous refiner operates at a constant speed and disk pressure, it is not practicable to synchronize the capacity of the refiner to the production of the paper machine and maintain freeness within the range desired. In order to control freeness within suitable limits, it is necessary to use recirculation ranging from 15% to as much as 50% of paper machine production.

Effect of Recirculation. Since there is a mixture of raw pulp and refined pulp being pumped into the continuous refiner, there is also a corresponding variation in coarseness. For instance, a mixture of 50% raw pulp of 3.50 mm. fiber length and 50% of refined stuff having a fiber length of 2.50 mm. would have an average fiber length of 3.00 mm. and the throughput would be increased as compared with raw pulp only. Since 50% of the inlet pulp has already passed through the disk once, its coarseness has been reduced and its felting power increased. This portion of the furnish, therefore, assists the passage of the raw pulp through the disks. More refining action is sustained by the coarser raw pulp than is the case with the refined portion and the overall effect is a more uniform freeness.

8. *Wear.* Another important factor in controlling freeness is the wear of the disk surfaces. As the disks gradually wear, the depth and sectional area of the grooves become less, consequently throughput drops. Since the speed is constant, the only way to increase capacity is to raise the inlet pulp pressure but, as shown above, the freeness will rise. This may be compensated to some extent by increasing the hydraulic pressure. As an example, disks operating at 8 p.s.i. inlet pulp pressure and 300 p.s.i. hydraulic pressure may wear so that the inlet pulp pressure must be raised to 12 p.s.i. with an increased hydraulic pressure of 330 p.s.i. Obviously, it is necessary to use the most abrasion resisting metal that can be found and, at the same time, design disks which will keep their bars covered with fibers and thus protect the bars from wear. Furthermore, the metal used should be resistant to corrosion and erosion. Stainless steel disks have been used over a period of 9 years and experience in a number of mills operating on different furnishes shows a wear of approximately 0.040 inch per annum. Efforts are constantly being made to reduce this wear in order to improve the uniformity of freeness and other stuff properties and, at the same time, reduce maintenance costs. Usually disks are made thick enough to permit regrooving over a period of 20 years barring accidents and unusual conditions.

*Instruments.* In order to control freeness on any run or to duplicate the same grade at any future time, a continuous refiner should be equipped with a recording inlet pressure gage and a recording kilowatt meter. In the event the inlet pulp pressure is changed a record is made which can be correlated with the sheet properties existing at the time of the change.

## Power Input Characteristics

For a specific disk design the power input to a disk refiner depends upon the following factors: 1. disk speed, 2. disk pressure, and 3. characteristics of raw pulp and desired properties of the refined stuff.

### SPEED

Over a period of nine years, speeds ranging from 240 to 514 r.p.m. have been used on disks with 42

inch diameter. Consideration of stock friction and the dimensions of disk clearances and grooves indicates that the laws of streamline flow apply to the movement of stock through well designed disks. Input power should therefore vary approximately as the square of disk speed and the fourth power of disk diameter. The use of higher speeds or larger diameters can only be justified when increased capacity or improved stuff properties will result from the change. Considerable economies in capital expenditures have been effected by utilizing motors already available in mills. Large conical refiners are usually equipped with 300 to 400 hp. motors with speeds ranging from 360 to 514 r.p.m. and when used for driving 42 inch disks, peripheral speeds ranging from 3200 to 4450 f.p.m. are obtained. The use of slower speed motors is naturally attended by a decrease in throughput.

### Pressure

The highest disk pressure used on 42 inch disks is 32 p.s.i. At a speed of 450 r.p.m. the power input will be 300 hp. at this pressure. Pressures beyond 32 p.s.i. rapidly accelerate wear of the disk surface.

### Influence of Size and Shape of Particles

Beating and refining reduces the length and width of fibers according to the degree of beating and refining effect employed. The ultimate particle size is governed by the sheet properties required as illustrated by comparing glassine stock with kraft liner board. The shape of the particles is much more important as it affects the sheet properties materially in almost any grade of board and paper except those that are made from almost raw fiber such as facial tissues.

Studies have been made with continuous refining on 42 inch disks which indicate that the effect of shape of particles has an important effect upon production as well as quality.

In order to ascertain the effect of disks on fibers, a single rotating disk refiner has been shut down under full load while the inlet pulp pressure was 10 p.s.i. Although the speed was 450 r.p.m., the rotating disk came to a standstill in 1 second. The free water was allowed to drain away and the disks removed for inspection.

A specimen of the fibers in the refining grooves and over the bars was removed and then photographed with light shining on the specimen through both sides. Figure 3 clearly shows a layer of parallel fibers being combed out of the mass of fibers in the groove. Since the refining grooves are substantially radial in the disks, it is important to note that the fibers over the bar are at right angles to the groove. In other words, the fibers are being combed and brushed over the bars, thus giving a beating effect. This action can be increased by greater hydraulic pressure on the disk so that the fibers can be crushed, splitting the fibers into a mass of fibrillae. The shape of the particles is shown in Figs. 4 and 5.

Figure 4 shows the effect of continuous beating and refining and it will be observed that the fibrils are long and, in some cases, are still attached to the main fibers.

Figure 5 shows the effect produced by a conical refiner on the same pulp and at the same freeness. In this case the fibrils have been chopped up and become segregated fines. Conical refiners do not always produce segregated fines to the extent shown in this slide but tests made over a period of years show that a continuous disk refining system produces the desired sheet properties with a minimum of fines. Further investigations of the effects of size and shape of particles are in progress as the results obtained commercially with a continuous refining system are very striking.

Fig. 5

It has been shown on all board and paper machines which have a modern continuous beating and refining system that the stuff drains more freely on the wire with the result that a lower consistency is necessary at the headbox of the paper machine. In many cases, such as kraft liner board and papers, the headbox consistency has dropped 40% from that used with conical refiners. In one instance, the consistency on kraft liner was dropped from 0.85 to 0.45%.

The use of more water for forming the sheet has improved quality and production by improving sheet formation and felting on the wire. The generally accepted thought that more water on the wire increases the drying load is without foundation. In fact, it has been shown that the faster drainage on the wire coincides with more water removal on the presses and more rapid drying, consequently production is stepped up from 10 to 30%. The author regrets that more data are not given in this paper but hopes that it will stimulate more interest in continuous stock preparation.

## Conclusion

Despite delays in development work on continuous beating and refining systems because of war restrictions, considerable progress has been made on large kraft liner board machines producing over 400 tons per day and on small white paper machines producing book, bond, writing, and other specialties. This subject is so extensive and broad that many papers could be written and still not answer all the problems of stock preparation in the industry. Furthermore, the subject is still further complicated by the rapid changes going on in wood species used to produce the raw pulp. The old standards of sulphite, kraft, and soda pulps cannot be used today. The advantages of continuous versus batch operations are more urgently needed as the supply of skilled beatermen dwindles and paper machine speeds increase.

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# Instrumentation In Pulp and Paper Mills*

By John N. Franklin[1]


## Abstract

*The development of instrumentation from the recording of individual values to the controlling of complete integrated processes with all its intermediate ramifications has been so rapid that operational interpretation, economical management, and sound maintenance techniques lag behind the instrument designers' and builders' capacity to supply workable measurement and control devices. Economics and obsolescence are factors. Mill problems in installation, operation, and maintenance are increasing with the complexity of the work that instrumentation is asked to accomplish and out of proportion to the personnel and facilities offered to solve them.*

*Such problems are considered in the light of the author's experience in the fine paper industry, newsprint manufacture, and recently in much more highly instrumented industries. The difficulties generally encountered by management, engineering, operating, and maintenance departments are sketched over the background of Bowater's, Newfoundland, development over the past twenty years.*


The American pulp and paper industry and its associates in Canada and Newfoundland have used instruments for many years. C. H. Allen wrote a paper on "Automatic Cooking Control for Chemical Pulp." That was in 1920, a quarter of a century ago. Since then many excellent papers have been presented both here and elsewhere on the various phases of what is now a vital subject. The present author attempts to recapitulate, view retrospect and prospect, and give a broad picture of instrumentation in pulp and paper mills.

Recent development in the art and sciences of instrumentation, both in this and other industries, has been rapid and has outdated some of the installations that were satisfactory in the past. The present concern of the Technical Association with regard to committee work on this subject combined with the proposed enlargement of the instrument and control section in the text books makes such a presentation timely. Also, it may well be useful to observe what other industries are doing and also to see for just whom in the pulp and paper industry such a program holds interest.

To attempt to cover adequately and in detail the subject of instrumentation in any industry is a sheer impossibility. While the pulp and paper industry is by no means the most highly instrumented it nevertheless uses a diversity of instrument applications which staggers the imagination. The usual run of temperature, pressure, level and flow controllers are found with the added conglomeration of continuous weighing machines, gas injectors, gas analysers, pH controllers, relative humidity and sheet moisture instruments, all the varieties of electrical and mechanical combustion control systems, and last, but by no means least, stock consistency control which the author considers one of the most, if not the most, difficult of all instrumentation problems.

The author is fortunate in having had experience in both the fine paper and newsprint industries as well as, latterly, intensified experience in one of the most highly instrumented industries on the continent.

This paper discusses the various problems of intrumentation in the pulp and paper industry as they affect and are affected by management, engineering, operating, maintenance, and costs personnel over the background of a program of instrument revision in a large sulphite, groundwood, and news mill.

Reference to actual installations, to actual instruments in detail, is included solely for illustrative purposes for a discussion of detail is far more usefully left to committees and would only be confusing if discussed in this paper.

No two mills are alike or at the same stage of instrumentation use and development. Therefore a preliminary paper must be general.

## Development

Bowater's Newfoundland Pulp and Paper Mills Limited now operate a mill in Newfoundland that is a fine example of a progressive firm which has used its normal complement of indicators and recorders since inception in 1924 and which has kept pace with progress over the years until today it is just completing the installation of one of the finest sulphite mill control systems anywhere in the East.

Figure 1 shows a panel of instruments in the boiler house. These are steam flow meters using a variable resistance electrical circuit from the meter body transmitted to the recorders and integrators shown, and also to the indicators which are situated at the dry end of each paper machine, very remote from either the transmitter or the receiver. These instruments have been in service for over twenty years and their continued operation is a great tribute to their maker and to the electrical maintenance department which was charged with their care. They do, however, represent the phase of accounting instrumentation and, aside from giving information to the steam plant operators when a paper machine goes down, are chiefly the concern of the costs department. If one or more are off calibration for some time no real harm is done and the false information can

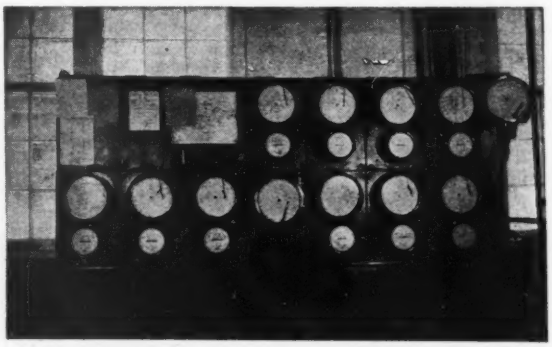

FIG. 1
Steam Distribution Panel in Boiler House. Indicators are on Each Paper Machine Dry End.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Bowater's Newfoundland Pulp and Paper Mills, Ltd., Corner Brook, Newfoundland.

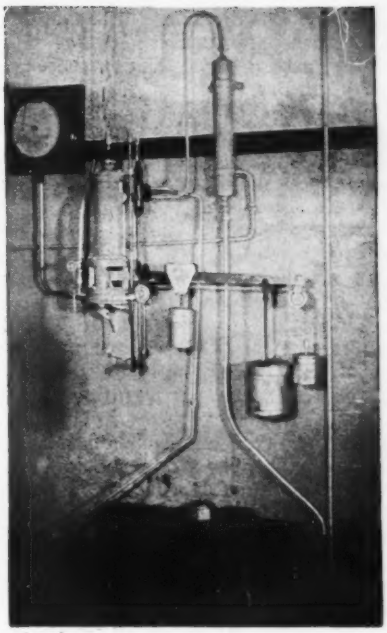

FIG. 2 (Left)
**Early Type of Self-Actuating Controller.**

FIG. 4 (Right)
**Panel to the Left Shows Mechanical Indicating and Recording Devices. Right Panel Electrical Automatic Combustion Control.**

usually be estimated reasonably accurately from balances.

Figure 2 shows an early type of self-actuated hydraulic controller similar to many found still in use giving good results on such services as pump pressure and the like. Notice that the recorder is an after-thought and has no connection with the controller.

Figure 3 shows an air-operated recording-controller which has been in service for many years. This is the simple type of throttling controller used in many services such as drier and grinder temperature control and steam plant pressure control and is common on level control problems. Note that any defect is quickly detected by the operator who is watching his instruments constantly and he can get help quickly, in the meantime going to hand control with which he is more or less accustomed.

The same argument applies to some of the simpler systems of combustion control as shown in Fig. 4. Here one panel contains the indicators and recorders while on the right is the automatic control panel which actuates draft dampers, feed water valves, and coal feeders.

Various views of a more complex system of control using time cycle and pressure control on cooking of direct heated sulphite digesters are given. Figure 5 shows the panel board arrangement in front while Fig. 6 shows the piping arrangement at the rear of the board. Figure 7 indicates the eight valves in a row which are operated from the time cycle controller which in its turn receives impulses from the steam flow transmitter shown in Fig. 8. The activating end of one flow transmitter and the accompanying valve are shown in Fig. 9.

There are several points of interest in such a system from a purely instrumentation standpoint. Firstly, while it is an apparently complex system it, nevertheless, is made up of simple components. Secondly it brings in the idea of time. This is quite easily done by having a clock reset the control point of a flow controller. Thirdly it is installed on sulphite acid which is difficult to handle. The pressure controllers are supplied with an intermittent purge, the level recorders with a continuous purge, of high pressure water. The arrangement of one unit is shown in Fig. 10.

### Potential Losses

While such systems have doubtless their distinct advantage from the process viewpoint, or they would not be purchased, they do present some new headaches for the instrument men.

For instance consider the simple temperature controller on steam control to a paper machine. If its action becomes slow the paper gets wet and is soon detected with negligible loss. If a consistency regulator wanders, the routine tests pick it up before any great harm is done.

In a relatively complex system, however, several unpleasant things may happen without easy detection. Consider just one, a slight mercury leak in the flow transmitter to the controller will make the transmitter read high. If the error is not large it will go undetected, the cam will reset the controller to a progressively lower steam flow though the recorder will follow the cam because it is actuated by the faulty transmitter. Until almost the end of the cook this situation is not noticed and by that time irreparable harm may have been done to the chips in the digester.

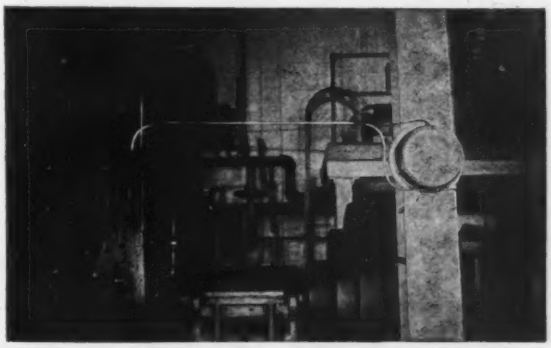

FIG. 3
**Air Operated Throttling Controller with Valve in Background. This Type in Use Since the Early 1930's.**

FIG. 5
Present Day Control Panel.

Such examples give some of the potential losses which can occur. The responsibility for them rests entirely with the instrument man. This appears at first to be a harsh and brash statement. Little thought is necessary, however, to a realization of its truth. When instruments were writing history considerable delay caused no great concern. Now that they are making history at the rate of many dollars a minute the man who can put his finger on trouble or avoid it entirely is extremely valuable. As far as instrumentation is concerned no one except the trained instrument man can do this. His is the responsibility.

## Personnel

Any discussion of personnel must, of course, be prefaced by the obvious fact that local conditions, number and complexity of instruments, and nearness to instrument service engineers all have a vital bearing on selection and training of instrument personnel. Any remarks therefore must be general but some underlying facts may prove useful.

The number of persons directly concerned with instrumentation installation and maintenance will, of course, vary with the work to be done. The staff, however, consists usually of an engineer and one or more technicians.

The engineer should be a graduate in either mechanical, electrical or chemical engineering in that order of preference. He will allot full or part time—usually part time—to instrument work but will be qualified by experience and knowledge to train men as instrument technicians. Most engineers are not qualified to do this. The author recently had the opportunity of conducting the graduating class in chemical engineering of a well-known university around the polymer synthetic rubber plant in Sarnia, Ontario, the most highly instrumented plant in Canada and was distressed to see that the knowledge possessed by those embryo engineers of the modern methods of process control of chemical industry was practically, if not absolutely, nil. Judging by the recorded proceedings of the conference on "Instrumentation and the University" held in Pittsburgh last fall the situation is little if any better in the United States. So don't blame the engineer too much. There are reasons for his ignorance. They are good and valid reasons though not unsurmountable and something is, apparently, going to be done about it soon.

If he is to be expected to head up the instrument program he should be given every opportunity to acquire the specific knowledge and experience necessary for that task. Almost all instrument manufacturing companies operate schools for accredited members of their customers' staff and full advantage should be taken of such opportunities.

Regardless of the method of acquisition the engineer must know the theory sufficiently to appreciate the installation problems, and the mechanics sufficiently to direct maintenance work. Whether he ever acquires the ability and knowledge to specify instrumentation on new applications usually depends on how far his plant is from the services of a competent sales engineer. His ability as a supervisor should be keen and his ability as a teacher phenomenal. His eye should be constantly trained on layout to see that it agrees with standard and progressive practice and on costs to see that material and labor expense on instrumentation is not out of all proportion to its intrinsic value. The maintenance of adequate inventories of spare parts, fittings, and materials of the trade not normally kept in stock by the mill storehouse may save him many a headache and his company many a dollar. He should keep abreast of the times on developments so that his advice on new work will be valuable when sought. He should also appreciate the weaknesses in any installations that are at present in the plant and strive to eliminate them before they become serious. Remodelling and revising should only be undertaken when definite savings either in process materials or in maintenance time are involved.

To Dean Inge is ascribed the statement "There are two kinds of fool—The one says 'This is old therefore it is good'—the other says 'This is new therefore it is better.' No better warning could be given to an engineer about to revise an instrumentation system which dates back anything up to a quarter of a century.

But the engineer's chief job is to keep his eye on the maintenance program to make sure that it systematically approaches the problem of "keeping 'em running" rather than, through lack of systematic planing, allowing the technicians to repair trouble only after it has happened. The old adage about the "the ounce of prevention being worth a pound of cure" sometimes reaches the tons very rapidly in a paper mill.

The engineer then must direct and plan and systematize but above all must come up with all the answers all the time if he is to maintain the position to which he aspires. Above all he should be honest. No man knows all there is to know about instrumentation and it very often happens that a baffling problem can be solved merely by getting out the manufacturer's instruction book and reading it from cover to cover. It may not contain the actual problem but will usually generate sufficient ideas to clear

FIG. 7
Automatic Steam Control Valves Operated by Time Cycle Controller.

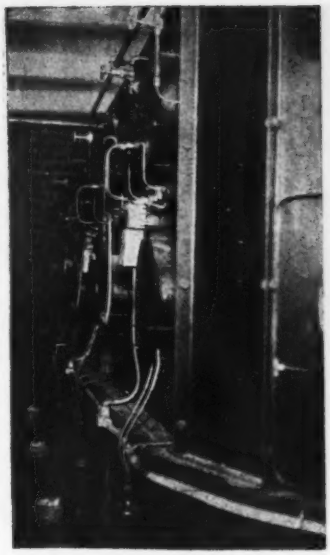

FIG. 6
**Back of Panel Showing Effort to Obtain Neatness and Uniformity.**

up the situation. Which is another way of saying that a well-stocked library should be always on hand and sufficient time to use it always available.

The technician must be the engineer's counterpart in most instances and his proxy in others. The more information the engineer can impart to the technician the better it is for both. Hence as a "tradesman" the technician may be said to be a veritable "jack of all trades" and should be master of instrumentation. For if instrumentation is not a recognized trade today it will be in the very near future. It is, however, a complex trade. It demands knowledge and skills which may be rightly connected with, if not definitely overlapping, other trades. Some of the first instruments were electrical and the present development of electrical devices promises to throw a terrific onus on the paper mill instrument technician if the mill is to benefit by the impetus of the war.

As one development engineer in the electronic field put it, the major limitation on the use of such devices is definitely the maintenance staff available to handle them. It is recognized that electrical instruments of either the conventional or electronic types are a far field from the general mill electrical maintenance program. Just how the instrument technician will react to this situation is problematical. It is common knowledge borne out by personal experience that a good electrical man will pick up mechanical instrumentation much easier than a mechanical man can pick up electrical work. The electrical man, however, is not usually willing to be bothered with mechanical contraptions. Where there is a large staff this is fine but in most mills where one man, or at the most three men, handle all the work they all have to be very versatile.

Pipe fitting is another trade on which the instrument man encroaches. Admittedly he is usually concerned with small tubing and compression, or flared, fittings which again is usually outside the average pipefitter's ken especially if a neat job is demanded as it should be in all instrument work.

If a lathe is provided, as in some instrument shops, the qualified machinist may be skeptical, though here again the tolerances and the delicacy of the work is something not normally practiced in paper mill machine shops. Each mill presents a different problem in these matters and no hard and fast rules can be laid down.

It does, however, become apparent that the formal education of the applicant for the job of instrument technician should be of a high order. Anything less than that required for entrance to a university, with a preference toward technical school work in electricity, will leave him groping when he tackles problems which demand a knowledge of physics, chemistry, electricity, mathematics, and combustion. To be a first class instrument technician he must be a good student on leaving school and be encouraged to continue his studies in the particular field of instrumentation. He should be permitted to spend as much time as possible at the instrument companies' schools, either accompanied by the engineer or not, and if possible, should be encouraged to join the local instrumentation society which in all probability is, by this time, an affiliate of the Instrument Society of America which was formed last spring. Much valuable data and a whole new attitude to the work can be gleaned from mingling socially with men who have similar problems even if they are not in the same industry. Visits to other industries, especially more highly instrumented ones like oil and synthetic rubber, can be invaluable not only as a means of comparing technical and semitechnical applications but also as a builder of morale and self-confidence.

Essentially, of course, the technician must be thoroughly familiar with the installation, operation, and maintenance techniques of all equipment under his care and must also have an appreciative knowledge of the process upon which this equipment is applied.

Neatness is paramount in instrument work and so is system for without system there is no maintenance.

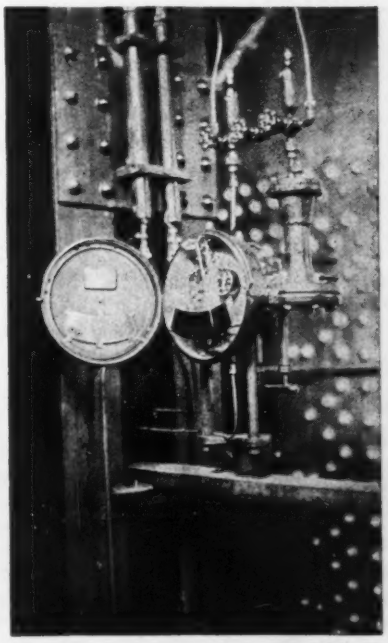

FIG. 8
**Steam Flow Indicating Transmitter.**

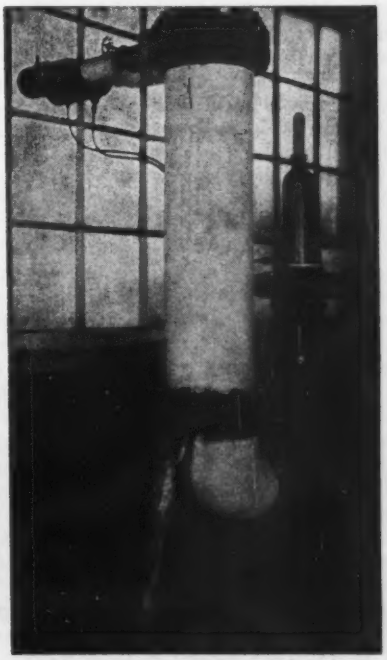

FIG. 9
**Orifice Installation and Control Valve.**

There must be adequate planning and complete records, systematic inspections and follow-up, surveys of work to be done, and critical examination of work performed and methods used. Only so can results be as desired.

Above all the technician must be an ace diplomat if he is to co-operate with, and demand co-operation from, operating personnel and the other maintenance organizations in the plant without which his efforts are futile.

The purchasing and stores departments will make demands upon the time and knowledge of the good technician. His advice will be invaluable when stocks of parts, fittings, tubing, and pipe are to be replenished and particularly when specifications have to be written for new instrumentation equipment.

There appears, therefore, to be a demand, not for just handymen, as so frequently has occurred in the past, but for a very special kind of a man, alert, constructively critical of his work and its results, trained to do a job, and given every encouragement to perform his work thoroughly and well. While a definitely limited number of such men will obviously be required, their future should be assured and secure for their training makes them valuable in any part of the plant and management will realize sure returns.

### Equipment

Without good and adequate equipment poor work is done at a terrific loss in efficiency, time, material, and morale.

As in all other phases of this work a great deal depends upon the magnitude and importance of the individual mill's instrumentation program. Regardless of the size and complexity of the job, however, there are certain minima which must be supplied.

One of these is a shop. The shop need not be pretentious, it need not be large, but it should be adequate. Figure 11 illustrates a shop layout that has been tried out and found to be satisfactory. It provides for the cleaning, overhaul and calibration of any instrument in the plant, either electrical, mechanical, or of the air-operated type. Such a layout should present a plan which may be modified to suit any plant of any size. The entrance should be sufficiently large that the ordinary hand truck can be accommodated without scuffing the door-jambs. Work may be commenced at any stage or can jump stages as required. The main feature lies in doing a first class job, in surroundings where good lighting, free from noise and vibration, permit of delicacy and accuracy; of keeping precise records; and of providing spare equipment with adequate storage. The storage is purposely put at the back of the shop to make sure that all equipment entering it is in first class state of repair and operating order ready to be taken out at a moment's notice. It is not a junk shop.

The instrument shop should also be supplied with sufficient portable equipment to enable the technicians to make accurate field checks and calibrations in a routine manner on all equipment which does not have to come in the shop for general overhaul or for other reasons. Such equipment as portable gage and pressure recorder testers, portable manometers for calibrating flow and liquid level instruments, portable temperature baths for such thermal systems as those ordinarily found in digesters, come into this category. They should be truly portable and also designed so that results may be obtained rapidly.

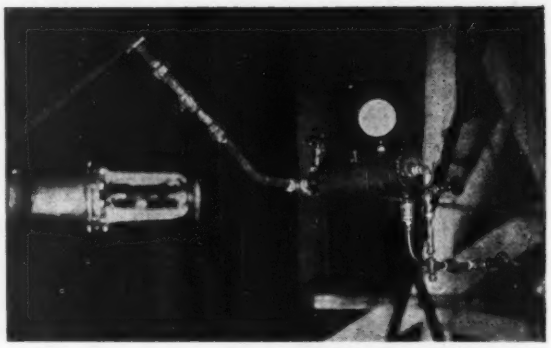

FIG. 10
A Continuous Purge Unit.

In such work good standards are essential. This is why a space for a standards cupboard is provided in the small office. All check thermometers, pressure gages and thermocouples can be standardized periodically by comparing them under shop conditions with the Bureau of Standards approved instruments or a carefully preserved dead weight tester as the case may be. This service of the shop is usually extended to include periodic checking of basis weight scales, bursting strength testers, and general mill laboratory equipment, making up test-weights from the reference standards, and issuing them for daily or shift checks by operating and laboratory presonnel.

It is frequently valuable, depending on the stores organization, to have, in the shop itself, small stocks of parts, fittings, tubing, and the standard materials used in instrument work. These differ so markedly from the stocks normally carried in stores, and quantities used are so apt to vary widely, that it is unreasonable and uneconomical to expect the stores to carry them, to say nothing of the time spent in requisitioning the various parts and fittings individually as required.

It will be noted also that provision has been made for lathe, spray painting booth, and drill press. The inclusion of these items depends entirely on local conditions and upon the efficiency of the other mill maintenance services.

The item of records could well be the subject of an entire paper. Adequate records are an essential part of instrumentation. Superfluous records are the curse of any organization. On record in the shop should be the installation data of each application with sufficient notations thereon to present, at any time, its exact status. The daily log book is useful for, from it, can be compiled the running story of all equipment as well as, in itself, being an excellent source of research data on any installations which may be faulty. Monthly and special reports to management keep them informed of progress. There is an art in report making which should form part of every technician's training.

Finally, the instrument shop needs a good up-to-date library containing operating instructions and diagrams of each piece of instrument equipment in the mill. Instrumentation in industry suffers the growing pains of any relatively new scientific application but more so than most because of its lack of good literature and reference. To date almost all such literature has been included in the advertising and instructional bulletins of the instrument companies

with a few exceptions. Perhaps the most notable of these is the contribution of "Instruments" magazine and the published works of the ASME and the American Gas Association. Two books worthy of the deep study of every instrument engineer and technician are Rhodes "Industrial Instruments for Measurement and Control" which is believed to be the first comprehensive volume of its kind and "Principles of Industrial Process Control" by Donald Eckman of the Brown Instrument Company, who has produced a masterful treatise on industrial process control.

In addition to the personnel actively engaged in the instrumentation program others are vitally interested therein.

### Management

Management's function is to manage, economically and, if possible, morally. Only a poor manager places an unskilled or untrained man on a job requiring the greatest skill and training. There are few jobs in any industry that require more skill and training than does instrumentation. There are few jobs that get less. This is management's problem. It is the instrument technician who, in the final analysis, tells the manager how much coal he burns, how much steam is used and how efficiently and how much wasted, how much chips per ton of sulphite, how much sulphur—this could go on indefinitely but it does indicate how much the manager is directly dependent upon his technician's ability to keep delicate and complex equipment in perfect order. Unless it is in good order the figures lie to the manager. And, worst feature of all, the manager never knows if he is receiving erroneous information.

A friend in the instrument sales business recently wrote: "The number of consistency regulators that have been brought since the principle of regulation has been known, measures the preference for gadgets over management."

This statement implies management's inability to correctly evaluate the various mechanisms offered. This is not a plea for the elimination of control equipment. Quite the reverse. If a process can be controlled better and more economically automatically, it should be done without a shadow of doubt. The point to be made is that poorly or wrongly applied intrumentation does the manager no good and also brings discredit on the supplier whose usual fault is that he just has not the time to stay with all the equipment he sells for a sufficient time to ensure that all interested parties are well informed.

Therefore, each mill needs two things from management's standpoint: (1) An expert on the staff to give advice on measurement and control problems, and (2) trained application and maintenance men who will get the most out of the equipment all the time.

### Engineering

To date few engineering schools introduce their

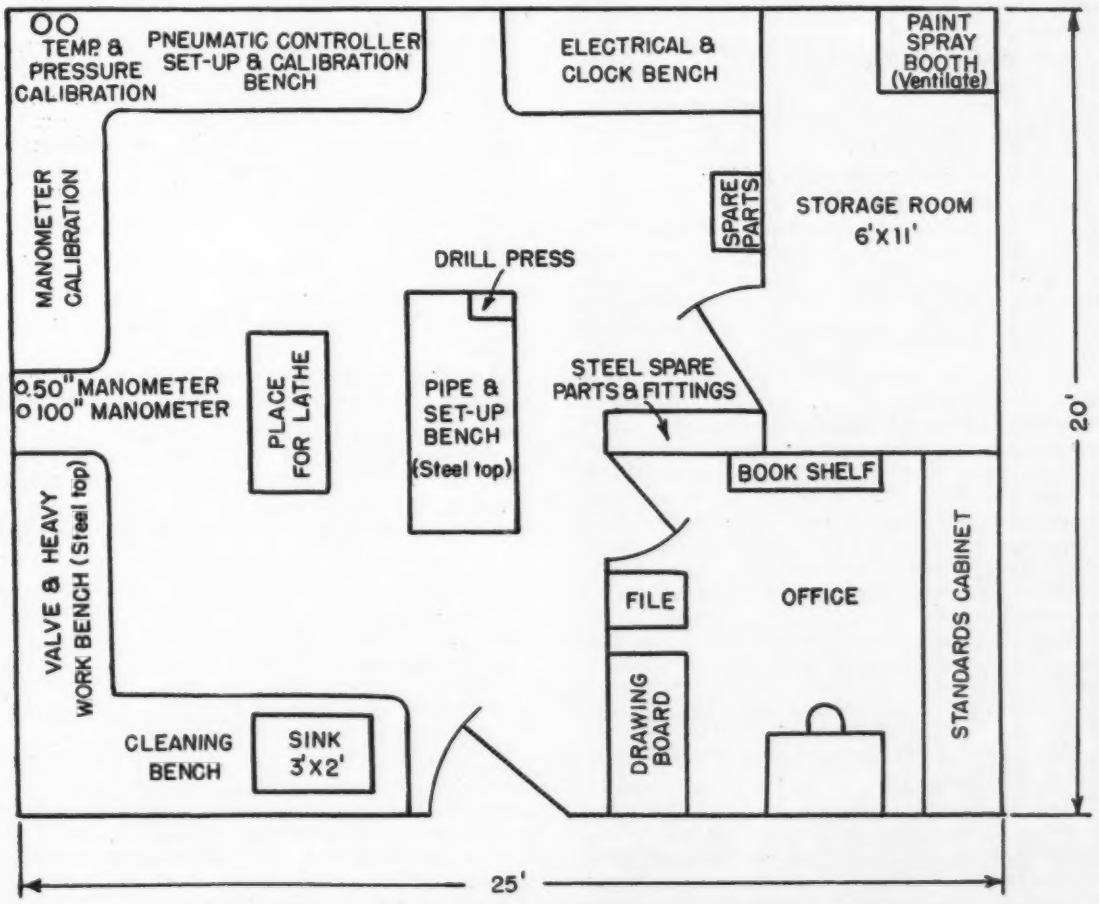


FIG. 11

**Instrument Maintenance and Repair Shop. Good Lighting and Freedom from Noise and Vibration are Required.**

students to the mysteries of instrumentation, which leaves the practicing engineer in a peculiar position. He is vaguely familiar with the principles but totally ignorant of designs or even of the fundamentals which make the various designs preferable in certain circumstances. Occasionally, and sadly, he is in charge of ordering instrumentation equipment. He then can do one of two things. Use his head and his imagination, and his results will depend on just how good he is at a tough problem; or he can call in the sales engineer and be directed solely by him. The latter course is, at present, usually by far the most satisfactory, though, if the project is big, considerable delay and disappointment may result because selection and deliveries are inevitably dependent on one company. All of them are good but all have certain things that they do better than their competitors. The good engineer knows this and gets the best from each.

Another phase of engineering is lay-out. Here, ease of operation and ease of maintenance depend entirely on the lay-out engineer and should have precedence over first cost. Material and labor costs in installation are nothing compared with the maintenance costs and operating losses involved in a poorly designed, poorly installed instrumentation system.

The design engineer can assist instrument maintenance to a very large extent by standardization of hook-ups for various installations. Standardization of piping sets and similar lay-outs is almost as important as the interchangeability of parts in the actual instrument.

Most installation diagrams supplied by manufacturers stress the essentials for good operation but do not always put in the added connections and valves which, while they cost a little more initially, reduce maintenance costs and have even been known to save the installation from becoming a liability.

Operating men are the ones who use instruments. It is no secret that a good operator can operate "by the seat of his pants." But such men are scarce and getting scarcer and it is not always possible to judge their experience. The man trying to operate by experience is not always successful, therefore instruments were required.

First these indicated what was going on at various stages of the process, and the operator was required to control the process by manual adjustment of valves. As time went on and competition became keen, more uniformity was desired and it was found that the instrument could be made to adjust a valve when the process or some function of it went off its former course ever so slightly. From that time on the instrument, not the operator, actually did the controlling. That was an extremely important and vital step. It commenced to take the process control out of the hands of the operator and give it to an inanimate robot. But the operator, in most cases, was not responsible for the maintenance of the instrument, merely for what it did. All he was required to do was to get back on "hand control" if he was not satisfied with the job the instrument was doing and go on from there.

However, the change has two features. First it is becoming increasingly difficult to detect wandering in some instrument set-ups and second, the operator is at the mercy of the ability of the instrument technician for the ease of his operation and also, in many cases, for the results on his process.

However, in the more or less continuous war which is waged between the plant instrument personnel and operating staffs as to the responsibility for instrument failure the operating group are not altogether blameless and it is significant and encouraging to see more and more co-operation between the two.

In any system of control, the instrumentation and the process are part and parcel of the same indivisable operation and it is only common sense to demand that the instrument personnel possess sufficient process knowledge to enable them to carry out their duties intelligently and that the process staff have sufficient instrument appreciation to interpret the records correctly and, more important, to know when the instruments are working and when they are not. This latter requirement is by no means as easy as it sounds.

### Cost Departments

Instrumentation is coming out of the miscellaneous class in its importance to industry and should therefore demand attention from the cost people.

To hide instrument costs in general expense may lead to some very serious inefficiencies and is definitely not desirable either from the standpoint of the mill, of the sales engineers, or maintenance. Correct appraisal of instrument installation and maintenance costs, will lead to greater appreciation of those installations which are justifiable and to an elimination of those which are not. Only by such procedure can the science of instrumentation progress to the satisfaction of everyone. False information as to cost satisfies nobody.

Such appraisal will undoubtedly show that instrumentation is paid for whether or not it is installed.

Lack of necessary instrumentation costs money in loss of uniformity of product and ease of operation. Good instrumentation with inadequate maintenance will soon become a liability rather than an asset. Poorly equipped technicians lose dollars waiting for material; using wrong tools they spoil expensive equipment.

### Conclusions

1. Rapid growth and increased complexity have placed much greater responsibility on instrument personnel.

2. Instrumentation costs are a matter of grave concern because of the potential losses which failure and poor maintenance may entail.

3. Instrumentation is a complex trade requiring study and skill. The most valuable instrument technician is one who knows his instruments and the processes involved equally well. He must be given every opportunity to develop into such a useful man. He should have sound basic education, specialized training in instruments, knowledge of process, self confidence, and good equipment.

4. Instrument maintenance means keeping the equipment running all the time. Any losses incurred because of instrument failure are the direct responsibility of the instrument technician.

5. Instrumentation appreciation on the part of management is extremely valuable. Engineering must give sound design and sound layout; operating must be facile in interpretation and detection of failure. Costs must be honest and accurate; and maintenance must be alert, studied and skilled, if maximum advantage at minimum cost is to be obtained.

6. Mills usually pay for instrumentation and good maintenance whether they have it or not.

*Speaking of floors*

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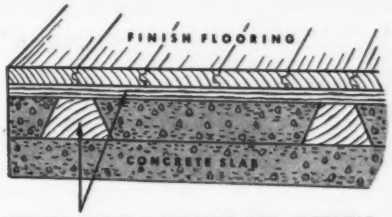


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# Butterworth CALENDER ROLLS

# Paper and Paper Stock Imports At New York and Other Ports

## NEW YORK IMPORTS

WEEK ENDING JULY 13, 1946

SUMMARY

| | |
|---|---|
| Newsprint | 15,073 rolls |
| Paperhangings | 48 bls., 2 cs. |
| Wall Paper | 3 pcls. |
| Filter Paper | 46 cs. |
| Drawing Paper | 7 cs. |
| Photo Paper | 82 cs. |
| Wafer Paper | 10 cs. |
| Tissue Paper | 19 bbls. |
| Miscellaneous Paper | 6 cs. |

### NEWSPRINT

H. G. Craig Co., Inc., A.C.D., Donnacona, Que., 343 rolls.

International Paper Co., International No. 1, Gatineau, Que., 310 rolls.

H. G. Craig Co., Inc., Newscarrier, Donnacona, Que., 387 rolls.

N.Y. Journal American, Markland, Liverpool, N.S., 883 rolls.

N.Y. Tribune, Inc., Markland, Liverpool, N.S., 1683 rolls.

World Telegram, Markland, Liverpool, N.S., 606 rolls.

Brooklyn Eagle, Markland, N.S., 538 rolls.

Herald Statesman, Inc., Markland, Liverpool, N.S., 4 rolls.

Richmond Newspapers, Inc., Markland, Liverpool, N.S., 1322 rolls.

H. G. Craig Co., Inc., Donpaco, Donnacona, Que., 367 rolls.

Montgomery Paper Co., Riggers Eye, Botwood, N.F., 8630 rolls.

### PAPERHANGINGS

W.H.S. Lloyd & Co., Port Huon, London, 48 bls., 2 cs.

### WALL PAPER

Universal Transcontinental Corp., Maine, Copenhagen, 3 pcls.

### FILTER PAPER

Stevens Nelson Paper Corp., Port Huon, London, 1 cs.

H. Reeve Angel & Co., Inc., Port Huon, London, 28 cs.

H. Reeve Angel & Co., Inc., American Farmer, London, 17 cs.

### DRAWING PAPER

Winsor Newton, Inc., Port Huon, London, 1 cs.

H. Reeve Angel & Co., Inc., Port Huon, London, 3 cs.

H. Reeve Angel & Co., Inc., American Farmer, London, 3 cs.

### PHOTO PAPER

Intercontinental Forwarding Co., Inc., Port Huon, London, 82 cs. (base paper).

### WAFER PAPER

Pfeil & Holing, Westerdam, Rotterdam, 10 cs.

### TISSUE PAPER

Manifold Supplies Co., Vasaholm, Kotka, 13 bbls.

Remington Rand, Inc., Vasaholm, Kotka, 6 bbls.

### MISCELLANEOUS PAPER

Jay Madden Corp., Vasaholm, Kotka, 1 cs. (samples).

(——), Port Huon, London, 5 cs.

### RAGS, BAGGINGS, ETC.

W. Steck & Co., Inc., Silversandal, Bombay, 75 bls. old jute rags.

W. J. Green & Co., Silversandal, Bombay, 92 bls. old linen canvas rags; 25 bls. old jute rags.

Alex Jacobs & Co., Silversandal, Bombay, 200 bls. old jute rags.

A. W. Fenton Co., Silversandal, Bombay, 140 bls. old jute rags.

Padawer & Co., Silversandal, 600 bls. cotton waste.

Schimmel Trading Corp., Silversandal, Bombay, 156 bls. cotton fly waste.

New England Waste Co., Silversandal, Bombay, 500 bls. cotton fly waste.

Riverside Mills, Silversandal, 775 bls. cotton waste.

Volkart Bros., Inc., Silversandal, Bombay, 500 bls. cotton waste.

J. E. Smith, Silversandal, Bombay, 100 bls. cotton waste.

A. Bloch & Co., Silversandal, Bombay, 50 bls. bagging.

C. Comiter & Co., Silversandal, Bombay, 183 bls. cotton waste.

National City Bank, Silversandal, Bombay, 50 bls. cotton waste.

Ayres W. C. Jones, Inc., Silversandal, Bombay, 200 bls. cotton waste.

Textile & Paper Supply Corp., Silversandal, Bombay, 50 bls. cotton waste.

Brandwein Mazur Co., Silversandal, Bombay, 200 bls. cotton waste.

S. H. Waldestein & Co., Silversandal, Bombay, 5 bls. cotton waste.

Castle & Overton, Inc., Anson P. K. Safford, Glasgow, 330 bls. jute waste; 38 bls. old cotton rags.

(——), Anson P. K. Safford, Glasgow, 83 bls. paperstock; 103 bls. old cotton rags; 121 bls. bagging; 13 bls. rags.

Rosen Woolstock Co., Andalien, Talcahuano, 6 bls. new sweater clips.

Tradesmans National Bank Trust Co., Port Huon, London, 207 bls. rags.

Guaranty Trust Co., Port Huon, London, 113 bls. rags.

Castle & Overton, Inc., Port Huon, London, 69 bls. rags.

E. J. Keller Co., Inc., Port Huon, London, 50 bls. old colored cotton rags.

S. Shapiro & Sons, Westerdam, Rotterdam, 91 bls. old scrap bagging.

Continental Bank Trust Co., William R. Lewis, Antwerp, 374 bls. rags.

Irving Trust Co., Empire Lankester, Cabedello, 719 bls. cotton waste.

Bank of Nova Scotia, Exanthia, Piraeus, 116 bls. rags.

W. J. Green & Co., Inc., Exanthia, Piraeus, 190 bls. rags.

Padawer & Co., Marine Leopard, Shanghai, 692 bls. cotton waste.

Riverside Mills, Marine Leopard, Shanghai, 300 bls. cotton waste.

W. J. Green & Co., Inc., Dothan Victory, Santos, 22 bls. rags.

Americale Trading Co., Dothan Victory, Santos, 44 bls. rags.

Continental Bank Trust Co., Pacific Exporter, Avonmouth, 677 bls. old army overalls.

Tradesmans National Bank Trust Co., Pacific Exporter, Newport, 1158 bls. old webbing (paperstock).

### OLD ROPE

(——). Anson P. K. Safford, Glasgow, 16 coils.

### WOODPULP

Pulp Sales Corp., Vasaholm, Kotka, 3758 bls. prime unbleached sulphite woodpulp, 736 tons; 450 bls. prime unbleached sulphate woodpulp, 90 tons.

### WOODPULP BOARDS

Jay Madden Corp., Vasaholm, Kotka, 631 bls. (solid white) 180 tons.

## ALBANY IMPORTS

WEEK ENDING JULY 14, 1946

J. Andersen & Co., Paramatta, Hernosand, 3000 bls. sulphate pulp, 500 tons.

Cellulose Sales Co., Inc., Paramatta, Hernosand, 1896 bls. sulphate pulp, 316 tons.

Brown Bros. Harriman & Co., Paramatta, Hernosand, 6,000 bls. dry white mechanical pulp, 1016 tons.

Pagel Horton & Co., Inc., Paramatta, Hernosand, 7617 bls. strong unbleached sulphite pulp, 1267 tons; 4877 bls. dry white mechanical pulp, 813 tons; 13,107 bls. dry sulphate pulp, 2184 tons.

Perkins Goodwin & Co., Paramatta, Ostrand, 1219 bls. kraft sulphate pulp, 203 tons.

Cellulose Sales Co., Inc., Paramatta, Ostrand, 2280 bls. kraft sulphate pulp, 380 tons; 150 bls. dry sulphite pulp, 25 tons.

## PHILADELPHIA IMPORTS

WEEK ENDING JULY 14, 1946

Pulp Sales Corp., Vasaholm, Kotka, 1270 bls. dry mechanically ground woodpulp, 250 tons; 260 bls. prime unbleached sulphate pulp, 50 tons; 2935 bls. prime unbleached sulphite pulp, 585 tons.

## BOSTON IMPORTS

WEEK ENDING JULY 14, 1946

S. L. Ayres & Co., Inc., Silversandal, Bombay, 61 bls. cotton waste.

## BALTIMORE IMPORTS

WEEK ENDING JULY 14, 1946

The Borregaard Co., Inc., Kanangoora, Gothenburg, 1481 bls. dry chemical woodpulp, 287 tons.

Pulp Sales Corp., Vasaholm, Kotka, 4344 bls. prime unbleached sulphate pulp, 868 tons; 1125 bls. prime unbleached sulphite pulp, 225 tons; 756 bls. prime bleached sulphite pulp, 125 tons; 7493 bls. white mechanically ground woodpulp, 1496 tons.

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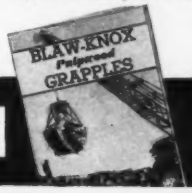
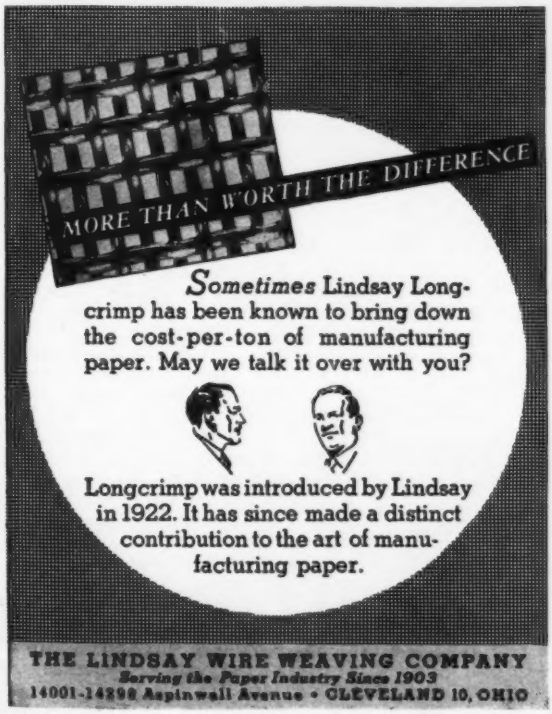



For complete data write for Bulletin No. 2043.

**BLAW-KNOX PULPWOOD GRAPPLES**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# Week's Record of Trends In The Pulp and Paper Market

Office of the PAPER TRADE JOURNAL,
Wednesday, July 17, 1946.

Sales of paper wholesalers in the first four months of 1946 were 16 per cent ahead of the same period last year, while inventories were 18 per cent greater than those of a year ago. This increase over last year indicates there has been some improvement in the flow of paper to the wholesale trade, still volume of paper currently received by the trade falls short of demand. Converters feel the shortage of paper and board in relation to demand for their product. Despite increased production mills are obliged to apportion output among their established customers. It remains difficult for a new converting business to obtain a supplier or for a converter who has lost his supplying mill to contract for his raw materials with another mill.

Trade reports indicate improvement in the tissue and napkin paper situation. Production of sanitary papers during the first four months of this year registered an 8 per cent increase over the comparable period of 1945. Production of tissue papers increased 22 per cent, and absorbent papers increased 4 per cent during the same period. Production of wrapping, bag, and converting papers all showed increases, but demand continues to run ahead of supply; especially for wrapping and bag papers. Supplies of groundwood printing, book and fine papers remain short mainly because of inadequate distribution of chlorine, casein and starch, as well as wood pulp.

Total exports of paper and paper board in the first quarter of 1946 represented 2.1 per cent of domestic production compared with 2.8 per cent in the 1945 period. Paper exports in the first quarter showed a slight gain over 1945, amounting to 3.2 per cent of production, whereas paperboard declined to 0.9 per cent of output.

The index of general business activity for the week ended July 6 fell to 123.3 from 133.6 in the previous week, compared with 122.2 for the corresponding week in 1945. The index of paperboard production fell to 145.8 from 164.4 in the previous week, compared with 109.3 for the corresponding week in 1945.

Paper production for the week ended July 6 was estimated at 61.1 per cent, compared with 105.5 for the preceding week, with 47.9 for the corresponding week in 1945, with 50.9 for 1944, with 66.2 for 1943, and with 69.7 for the corresponding week in 1942.

Paperboard production for the week ended July 6 was 70.0 per cent of capacity, compared with 98.0 per cent for the preceding week, with 62.0 for the corresponding week in 1945, with 60.0 for 1944, with 69.0 for 1943, and with 52.0 per cent for the corresponding week in 1942.

### Wood Pulp

Producers of market pulp who have been receiving a subsidy, which includes about 20 per cent of the market pulp made and sold by American mills, viewed the ending of OPA with some alarm. If these mills, which are the major producers of bleached sulphite and bleached soda pulp, get no subsidy, they will be forced to raise their prices. Some of these mills have already increased their prices between $5 and $10 per ton.

If OPA is not returned to power, importers may soon be able to stimulate shipments from overseas by offering prices about $5 to $10 higher than at present. Swedish output is still limited due to low fuel supplies, however, but most mills are ready to pay higher prices for pulp providing they can recover it in the price of paper.

### Rags

Mills are buying heavy wipers at $50 to $55, and getting three times as much standard classification stock at $29 and $31. Stocks of roofing rags held by mills are a good deal greater than last year despite the fact that two mills alone control more than half the tonnage.

Heavy foreign dark cottons are expected to arrive here in greater volume later in the third quarter. Foreign rags are welcome, but mills still will not pay much over $70 per ton ex-dock Atlantic coast port. Mills are anxious to secure white cuttings, and will pay as much as 9c per pound for them at present. Colored cuttings are still upgraded. Fancy shirt cuttings command 4.50c and 4.75c.

### Old Rope and Bagging

Some imported sisal has arrived here, but no Manila to date. Mills are offering 4.75c dock for sisal and 5.75c for any stray Manila. Domestic sisal is plentiful at 4c and 4.75c for rope. Jute strings are steady at 5.25c to 5.50c per pound.

Bagging market is slower this week. No. 1 scrap burlap was down to $3 and $3.25, but most offerings were of inferior grade. Better grades were $3.50 and more; choice lots bringing $4.25 to $4.50 from paper makers. Southern mill run was $3.75 per 100 pounds, and gunny $4.

### Waste Paper

Mixed paper, folded news, old corrugated containers, No. 1 books and magazines are all below ceilings. While kraft, white ledgers, colored ledgers, soft and hard white shavings and envelope cuttings are in some cases above ceilings.

Mill stocks are heavier and the market is relatively easy. Mills are more cautious and expect more pulp with the ending of OPA. Still buyers are found for No. 1 books at $38.50.

## Southern Pulpwood Group Adds Forester to Staff

ATLANTA—The Southern Pulpwood Conservation Association has engaged a forester, effective July 15, to work in Virginia and North Carolina. This is the first of several foresters to be employed to serve the Association's territory extending from Virginia to Texas. Half of the consuming pulp and paper mills in the South, representing about 80 to 85 percent of the total pulpwood cut amounting to about 7½ million cords in 1945, are members of the Association.

Howard J. Doyle, recently employed with the United States Forest Service, stationed at Athens, Georgia, who has had over five years' experience in southern forestry, has been selected for this position. Mr. Doyle will work in the woods with producers of pulpwood, timberland owners and public forestry officials in rendering direct service to improve the care and treatment of our forests, which is one of the major natural resources in the South.

**REDUCE REGISTER COMPLAINTS**

**If printers and lithographers will use the *Cambridge* Printers' Moisture Indicator to determine the relative humidity of paper and pressroom, they are in position to avoid the most common cause of "off register." This accurate, rugged instrument has the measuring element enclosed in a blade for insertion between hung or stacked sheets. An adjustable index pointer is provided for fixing reference points.**

***Write for descriptive bulletin.***

**CAMBRIDGE INSTRUMENT CO., INC.**
3702 Grand Central Terminal, New York 17, N. Y.

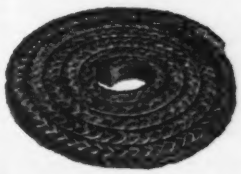
**CAMBRIDGE**
**PRECISION INSTRUMENTS**

# YOU CAN'T POUR LOST SYRUP ON A PANCAKE!

**Between the tree and the table there are many places where syrup is lost . . . leaky valves and pumps for instance. The losses of liquids or gases escaping past improper packing is enough . . . but the *lost production* due to needless shut-downs for the replacement of faulty packing is downright costly! That's why particular care should be exercised in the selection of the *right* packing for every application.**

## USE THE *RIGHT* PACKING!

**PALMETTO makes the *right* packing for every one of your applications . . . the right quality for most economical maintenance . . . the right design for most effective sealing—with least wear to rods, shafts and stems.**



**Write today for bulletins which show *what* packings to use *where*.**

**GREENE, TWEED & CO.**

Bronx Blvd. at 238th St., New York 66, N. Y.
Plants at New York, N. Y. and North Wales, Pa.

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**PALMETTO** PALMETTO for steam, water, air. PELRO for oils. CUTNO for alkalis. SUPER-CUTNO (blue asbestos) for acids. KLERO for foods.

*Self-Lubricating* **PACKINGS**

---

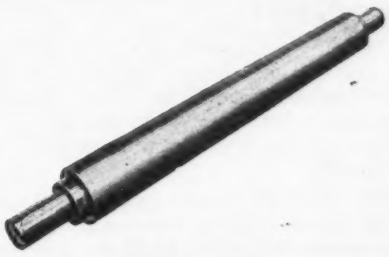
***Announcing***

## PROMPT SERVICE

***Reconditioning***

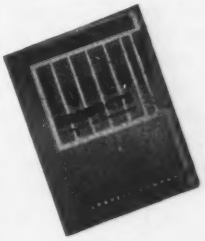
## PAPER MILL ROLLS

**Send us your paper machine rolls, which—through use or accident—have become unserviceable, and we will give them a "good-as-new" finish. We can replace that extreme accuracy and high finish on the working face of calender, couch, press, rubber or other rolls. We have the facilities for extremely *prompt* refinishing . . . which will put those rolls back in service quickly.**



**"PURALOY" . . . a good name to remember, when in need of *new* rolls. From 10 to 15% harder and more resistant to abrasion and corrosion than ordinary chilled iron rolls. Lobdell "Puraloy" rolls are available in different alloys, for use with various dyes and chemicals encountered in the paper, rubber, paint, oil and other industries.**

**LOBDELL CHILLED IRON ROLLS . . . carefully cast for hardness and wearing qualities are highly satisfactory for any *average* service. Today, we can quote sixteen weeks delivery on new rolls.**



**WRITE FOR CATALOG . . . on your letterhead, please. Get complete information on Lobdell machinery for the paper and allied industries.**

# LOBDELL

**COMPANY ESTAB. 1836 WILMINGTON 99, DEL.**

Rolls • Calender Stacks • Roll Calipers • New Improved Roll Grinding Machines

# MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 17, 1946.

BLANC FIXE—Demand reported active. Pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f. o. b. works.

BLEACHING POWDER—Market tight, demand reported strong. Supply situation is reported favorable with containers a bit easier to get. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots at works.

CASEIN—Prevailing prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 33 cents per pound; 2,000 pounds 33¼ cents per pound; less than 2,000 pounds, 33¾ cents per pound, f. o. b. shipping point. Imported, 33 cents per pound.

CAUSTIC SODA—Very heavy demand continues. Cutback production reduces stocks. Market tight with demand above output. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 to $2.95 per 100 pounds.

CHINA CLAY — Demand currently fair to good. Quotations remain unchanged. Supply good. Domestic filler clay is currently quoted at from 8.50 to $9 per ton; coating clay is quoted at from $12 to $22 per ton, at mine; Imported clay is quoted at from $22 to $25 per long ton, ship side.

CHLORINE — Improvement expected in this tight market, demand heavy. Quotations unchanged. Chlorine is currently quoted at $2.00 to $2.25 per 100 pounds, in single unit tank cars, f. o. b. works.

ROSIN—Demand continues moderate. "G" gum rosin is quoted at $6.90 per 100 pounds, in barrels, at Savannah; "FF" rosin at $6.80 per 100 pounds, in barrels, at New York; seventy percent gum rosin at $7.00 per 100 pounds, f. o. b. works.

SALT CAKE—Current inventories low with demand increasingly heavy. Prices remain unchanged. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f. o. b. shipping point.

SODA ASH — Active over-all demand is reported. Market remains tight with demand above output. Orders allocated to equalize distribution. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels $1.35.

STARCH—Market light with demand exceeding supplies. Previous orders filled. Starch prices continue unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags; car lots, f. o. b. Chicago.

SULPHATE OF ALUMINA—Moderate supplies with demand reported active. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.35 per 100 pounds, in bags, car lots, f. o. b. works. The iron free is currently quoted at $1.75 to $2.00 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand moderate. Annual contracts are quoted at $16 per long ton, f. o. b. mines; the prices at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $24 to $30 per ton. All prices in car lots.

# MARKET QUOTATIONS

While the trade is adjusting its policies, pending determination of further authority for OPA and its scope, the prices quoted continue under recent formulas. All quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942.

## Paper

(Delivered New York)

| | | | |
|---|---|---|---|
| Standard News, per ton— | | | |
| Roll, contract | *$73.80 | @ | — |
| Sheets | 75.00 | @ | — |
| Kraft—per cwt.—Carload Quantities Zone A, Delivered | | | |
| Superstandard Wrapping | *$5.25 | @ | — |
| No. 1 Wrapping | *5.00 | " | — |
| Standard Wrapping | *4.75 | " | — |
| Standard Bag | *4.375 | " | — |
| Tissues—Per Ream—Carlots | | | |
| White No. 1 | 1.12½ | " | — |
| White No. 1 M. G. | 1.10 | " | — |
| White No. 1½ | 1.00 | " | — |
| White No. 2 | .90 | " | — |
| Anti-Tarnish M.F. | 1.20 | " | — |
| Colored | — | " | — |
| Kraft | .95 | " | — |
| Manila | .90 | " | — |
| Toilet—1 M. Sheets—Per Case | | | |
| Unbleached | 4.25 | " | — |
| Bleached | 5.70 | " | — |
| Unbl. Toilet, 1 M. | 4.16 | " | — |
| Bleached Toilet | 5.70 | " | — |
| Paper Towels, Per Case— | | | |
| Unbleached, Jr. | 2.20 | " | — |
| Bleached, Jr. | 3.20 | " | — |
| Manila—per cwt.—C. l. f. a. | | | |
| No. 1 Jute | 11.25 | @ | — |
| No. 1 Manila 35 lb. | 6.00 | " | 7.00 |
| Boards, per ton— | | | |
| News | *54.00 | @ | — |
| Chip | *54.00 | @ | — |
| Sgl. Mla. Ll. Chip | *65.00 | @ | — |
| White Pat. Coated | *79.00 | @ | — |
| Kraft Liners 50 lb. | *74.00 | " | — |
| Binders Boards | 84.00 | " | 116.00 |

*OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

| | Bonds | Ledgers |
|---|---|---|
| 100% Rag Ext. No. 1 | $39.10@$46.00 | $40.25@$47.25 |
| 100% Rag | 32.20 " 37.75 | 33.35 " 39.25 |
| 85% Rag | .... " .... | 29.90 " 35.00 |
| 75% Rag | 23.00 " 27.00 | 24.15 " 28.25 |
| 65% Rag | .... " .... | 22.80 " 27.75 |
| 50% Rag | 18.70 " 22.75 | 19.90 " 24.25 |
| 25% Rag | 16.40 " 20.00 | 17.55 " 21.50 |

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

| | Bonds | Ledgers |
|---|---|---|
| No. 1 | $10.55@$12.75 | $11.70@$14.25 |
| No. 2 | 9.65 " 11.75 | 10.80 " 13.25 |
| No. 3 | 9.20 " 11.25 | 10.35 " 12.50 |
| No. 4 | 8.90 " 10.75 | 10.05 " 12.25 |

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper
Delivered in Zone 1:

| | | | |
|---|---|---|---|
| No. 1 Glossy Coated | $13.65 | @ | $15.50 |
| No. 2 Glossy Coated | 12.40 | " | 14.00 |
| No. 3 Glossy Coated | 11.60 | " | 13.25 |
| No. 4 Glossy Coated | 11.15 | " | 12.75 |
| No. 1 Antique (water-marked) | 10.25 | " | 11.75 |
| No. 2 Offset | 9.60 | " | 11.00 |
| A Grade E. F. | 9.35 | " | 10.75 |
| A Grade S. & S. C. | 9.60 | " | 11.00 |
| B Grade E. F. | 8.85 | " | 10.25 |
| B Grade S. C. | 9.10 | " | 10.50 |
| C Grade E. F. | 8.55 | " | 9.75 |
| C Grade S. C. | 8.80 | " | 10.00 |
| D Grade E. F. | 8.25 | " | 9.50 |
| D Grade S. & S. C. | 8.50 | " | 9.75 |

Ivory & India at $.50 cwt. extra.

## Wood Pulp

OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight. Not Exceeding OPA Allowances.

| | |
|---|---|
| Bl. Softwood Sulphite | $94.00 |
| Unbl. Softwood Sulphite | 82.00 |
| Bl. Hardwood Sulphite | 91.50 |
| Unbl. Hardwood Sulphite | 79.50 |
| Bl. Glassine Sulphite | 97.00 |
| Unbl. Glassine Sulphite | 86.00 |
| N. Bleached Sulphate | 94.00 |
| S. Bleached Sulphate | 88.00 |
| N. Semi-Bleached Sulphate | 89.00 |
| S. Semi-Bleached Sulphate | 83.00 |
| N. Unbl. Sulphate | 76.00 |
| S. Unbl. Sulphate | 69.50 |
| Bl. Soda | 84.00 |
| Unbl. Soda | 80.00 |
| Groundwood | 58.00 |

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

| | Below 50% Air Dry Weight |
|---|---|
| Northeast | $12.50 |
| Lake Central | 12.50 |
| Southern | 15.00 |
| West Coast (in area) | 9.50 |
| West Coast (out area) | 15.50 |

| | 50%-80% Air Dry Weight |
|---|---|
| Northeast | $10.50 |
| Lake Central | 10.50 |
| Southern | 13.00 |
| West Coast (in area) | 8.50 |
| West Coast (out area) | 14.50 |

Applying to Producers of Dry Wood Pulp.

| | Above 80% Air Dry Weight |
|---|---|
| Northeast | $7.50 |
| Lake Central | 7.50 |
| Southern | 10.00 |
| West Coast (in area) | 6.50 |
| West Coast (out area) | 12.50 |

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

## Domestic Rags

New Rags

(Nominal Prices Delivered — Mill + 5% Brokerage)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No. 1 | 7.25 | @ | Nominal |
| Silesias No. 1 | 5.75 | " | " |
| New Unbleached | 7.50 | " | " |
| Blue Overall | 5.50 | " | " |
| Fancy | 3.50 | " | " |
| Washables | 3.00 | " | " |
| Bleached Khaki Cutting | 4.25 | " | " |
| Unbleached Khaki Cuttings | 3.50 | " | " |

THE McPHERSON COMPANY
GREENVILLE · SOUTH CAROLINA
MCO
Industrial Engineers

INDUSTRIAL SURVEYS · PLANT SITE INVESTIGATIONS · PLANS
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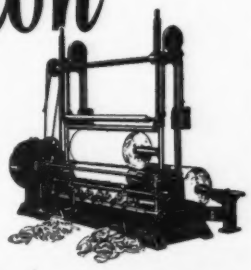
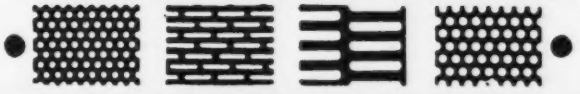
Langston
SLITTERS AND ROLL WINDERS
are accurately machined and balanced for high-speed operation. You get "custom tailored" finished rolls.



SAMUEL M. LANGSTON COMPANY, CAMDEN, NEW JERSEY

SCREENS of Perforated Metal



The Harrington & King PERFORATING CO.

5652 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

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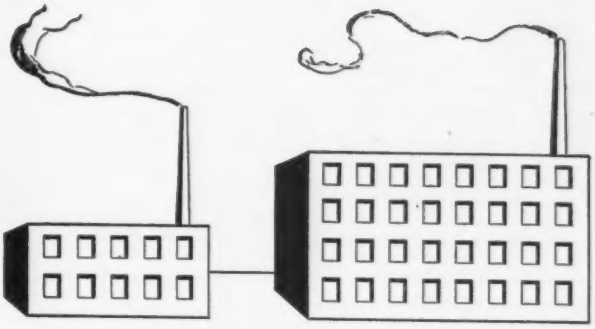

TWO PLANTS

Here's the story of two plants. Plant "A" is located in the Southeast. Plant "B" is not. Both are owned by the same company, enjoy the same aggressive management. Plant "B" has nearly four times the output of the Southeastern plant.

*But—last year Plant "A", located in the Southeast, produced more income for the company than did the other plant, despite the far greater production of Plant "B".*

How did this happen, you ask? The answer is easy. More than any other section of the country, the Southeast offers those advantages which assure better operating conditions for industry.

If you are interested in improving your company's position by locating where you can find the most advantageous combination of factors suited to your operations, we will gladly assist you. Long experience in helping management to do just that enables us to serve you quickly and thoroughly.

Your inquiry will be held in complete confidence and will entail no obligation on your part. Simply address:

*Dallas T. Daily*
*General Industrial Agent*
*Seaboard Air Line Railway*
*Norfolk 10, Virginia*

SEABOARD AIR LINE RAILWAY

THROUGH THE HEART OF THE SOUTH

### Old Rags

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | 3.80 | @ | Nominal |
| Miscellaneous | 3.20 | " | " |
| White, No. 2— | | | |
| Repacked | 2.90 | " | " |
| Miscellaneous | 2.65 | " | " |
| Thirds and Blues— | | | |
| Repacked | 2.20 | " | " |
| Miscellaneous | 1.30 | " | " |
| Roofing Rags— | | | |
| No. 1 | 1.55 | " | " |
| No. 2 | 1.45 | " | " |
| No. 3 (bagging) | 1.35 | " | " |
| No. 4 | 1.35 | " | " |
| No. 5A | 1.35 | " | " |
| Old Manila Rope | 5.75 | " | " |

### Foreign Rags

(All Prices Nominal)

New Rags

| | | | |
|---|---|---|---|
| New Dark Cuttings | 6.00 | @ | Nominal |
| New Mixed Cuttings | 6.50 | " | " |
| New Light Silesias | 5.75 | " | " |
| Light Flannelettes | 5.75 | " | " |
| New White Cuttings | 12.00-14.00 | | |
| New Light Oxfords | | | Nominal |
| New Light Prints | 8.00-10.00 | | |

Old Rags

| | | | |
|---|---|---|---|
| No. 1 White Linens | 8.50 | @ | Nominal |
| No. 2 White Linens | 7.50 | " | " |
| No. 3 White Linens | | | Nominal |
| No. 4 White Linens | 3.25 | @ | Nominal |
| No. 1 White Cotton | 4.75 | " | " |
| No. 2 White Cotton | 3.75 | " | " |
| No. 3 White Cotton | 3.00 | " | " |
| No. 4 White Cotton | 2.20 | " | " |
| Extra Light Prints | 2.40 | " | " |
| Ord. Light Prints | 5.50 | " | " |
| Med. Light Prints | 4.75 | " | " |
| Dutch Blue Cottons | | | Nominal |
| French Blue Linens | | | Nominal |
| Checks and Blues | 4.00 | " | " |
| Linsey Garments | 4.00 | " | " |
| Dark Cottons | 3.60 | " | " |
| Old Shopperies | 3.35 | " | " |
| New Shopperies | 3.50 | " | " |
| French Blues | | | Nominal |

### BAGGING

(Prices to Mill, f.o.b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | 4.00 | @ | Nominal |
| Domestic | 3.30 | " | " |
| Wool Tares, light | 4.00-4.75 | | |
| Wool Tares, heavy | 4.50 | @ | Nominal |
| Bright Bagging | 3.50 | " | " |
| Manila Rope— | | | |
| Foreign | | | Nominal |
| Domestic | 5.75 | @ | Nominal |
| Jute Strings | 5.50 | " | " |
| No. 1 Sisal Strings | 4.00 | " | " |
| Mixed Strings | 1.50 | " | " |

### Waste Paper

Nominal Prices to Mills

(Dollars Per Ton)

F.o.b. New York, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | $67.50 | @ | — |
| No. 1 Hard White Envelope Cuts | 62.50 | " | — |
| No. 1 Hard White Shavings, unruled | 57.50 | " | — |
| No. 1 Hard White Shavings, ruled | 50.00 | " | — |
| Soft White Shavings, one cut | 57.50 | " | — |
| No. 1 Soft White Shavings | 50.00 | " | — |
| Soft White Shavings, Misc. | 43.00 | " | — |
| No. 1 Fly Leaf Shavings | 33.50 | " | — |
| No. 2 Fly Leaf Shavings | 22.50 | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 25.00 | " | — |
| No. 2 Mixed Groundwood Fly Leaf Shavings | 18.50 | " | — |
| Mixed Colored Shavings | 15.50 | " | — |
| Mixed Groundwood Colored Shavings | 18.00 | " | — |
| Overissue Magazines | 33.50 | " | — |
| No. 1 Heavy Books & Magazines | 38.50 | " | — |
| Mixed Books | 22.00 | " | — |
| No. 1 White Ledger | 46.00 | " | — |
| No. 2 Mixed Ledger, colored | 40.00 | " | — |
| New Manila Envelope Cuttings, one cut | 57.50 | " | — |
| New Manila Envelope Cuttings | 53.00 | " | — |
| Extra Manilas | 39.00 | " | — |
| Mixed Kraft, Env. & Bag Cuttings | 55.00 | " | — |
| Kraft Envelope Cuttings | 65.00 | " | — |
| Triple Sorted, No. 1 Brown Soft Kraft | 50.00 | " | — |
| New 100% Kraft Corrugated Cuttings | 45.00 | " | — |
| No. 1 Assorted Old Kraft | 35.00 | " | — |
| New Jute Corrugated Cuttings | 18.50 | " | — |
| Old 100% Kraft Corrugated Containers | 35.00 | " | — |
| Old Corrugated Containers | 78.00 | " | — |
| Box Board Cuttings | 14.50 | " | — |
| White Blank News | 33.00 | " | — |
| Overissue News | 22.00 | " | — |
| No. 1 News | 20.00 | " | — |
| No. 1 Mixed Paper | 19.00 | " | — |
| Old Corrugated Containers | 17.00 | " | — |
| Mill Wrappers | 22.00 | " | — |

### Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

| | | | |
|---|---|---|---|
| Coarse Polished— | | | |
| India | .21 | @ | — |
| White Hemp | .21 | " | — |
| Fine Polished— | | | |
| Fine India | .26 | " | — |
| Unpolished— | | | |
| Box | .17¼ | " | — |
| Paper Makers | .17 | " | — |
| Tube Rope | .19 | " | — |
| Wall Paper | .20½ | " | — |
| Wrapping | .23 | " | — |
| Soft Fiber Rope | .19 | " | — |
| Cotton | .25 | " | — |

(Hard Fiber)

| | | | |
|---|---|---|---|
| Medium Java | .18 | " | — |
| Mex. Sisal | .16 | " | — |
| Manila | — | " | — |

## PHILADELPHIA

### Domestic Rags (New)

(Price to Mill)

| | |
|---|---|
| Shirt Cuttings— | |
| New White No. 1 | .07¼ |
| New White No. 2 | .05¾ |
| Light Silesias | .05¾ |
| Black Silesias, soft | .03¾ |
| New Unbleached | .07½ |
| Washable Prints | .04¼ |
| Washable No. 1 | .03 |
| Blue Overall | .05½ |
| Cottons—According to grades— | |
| Washable Shredding | .01¾ |
| Fancy Percales | .04¾ |
| New Black Soft | .03¾ |
| Khaki Cuttings— | |
| Unbleachable Cotton Cuttings | .03½ |
| Bleachable Cotton Cuttings | .04¼ |
| Men's Corduroy | .03½ |
| Ladies' Corduroy | .03 |
| Cottonades | .03¾ |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1—Repacked | 3.80 | @ | — |
| Miscellaneous No. 1 | 3.20 | " | — |
| Miscellaneous No. 2 | 2.65 | " | — |
| White No. 2—Repacked | 2.90 | " | — |
| Thirds and Blues— | | | |
| Miscellaneous | 1.80 | " | — |
| Repacked | 2.20 | " | — |
| Black Stockings— | | | |
| (Export) | | | Nominal |
| Roofing Stock— | | | |
| Foreign No. 1 | | | Nominal |
| Domestic No. 1 | 1.55 | " | — |
| Domestic No. 2 | 1.45 | " | — |
| Roofing Bagging | 1.35 | " | — |
| Old Manila Rope | 5.75 | " | — |

### Bagging

(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | | | Nominal |
| Domestic | 3.00 | @ | 3.50 |
| No. 1 Clean Bright—Sisal Strings | .04 | " | — |
| No. 2 Clean Bright—Sisal Strings | .03 | " | — |
| Sisal Jute | .02½ | " | .02¾ |
| Scrap— | | | |
| No. 1 | 3.25 | " | 3.50 |
| No. 2 | 1.75 | " | 1.80 |
| Wool Tares, heavy | 4.00 | " | 4.25 |
| No. 1 New Light Burlap | 3.00 | " | 4.00 |
| New Burlap Cuttings | 3.75 | " | 4.00 |

### Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| Soft White Shavings, one cut | 2.50 | " | — |
| White Blank News | 1.65 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 White Ledger | 2.30 | " | — |
| No. 2 Ledger, colored | 2.00 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| Overissue Magazines | 1.67½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| Box Board Cuttings | .72½ | " | — |
| Kraft Corrugated Cuttings | 2.25 | " | — |
| Old Corrugated Containers | 1.40 | " | — |
| Overissue News | 1.00 | " | — |
| No. 1 News | 1.00 | " | — |

## BOSTON

### Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Shavings, unruled | 2.87½ | @ | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| Triple Sorted No. 1 Brown Soft Kraft | 2.50 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| White and Colored Tabulating Cards | 2.25 | " | — |
| Ground Wood Tabulating Cards | 1.35 | " | — |
| White Blank News | 1.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| Overissue News | 1.10 | " | — |
| Box Board Cuttings | .72½ | " | — |
| New Corrugated Cuttings, Kraft | 2.25 | " | — |
| Old 100% Kraft Corrugated Containers | 1.75 | " | — |
| Old Corrugated Containers | 1.40 | " | — |
| Jute Corrugated Cuttings | 1.07½ | " | — |

### Bagging

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign | | | (nominal) |
| Domestic | 2.75 | @ | 2.90 |
| Sisal Rope No. 1 | *4.75 | " | — |
| Sisal Rope No. 2 | * — | " | 4.00 |
| Mixed Rope | 1.60 | " | — |
| Transmission Rope— | | | |
| Foreign | | | (nominal) |
| Domestic | 2.75 | " | 3.00 |
| Manila Rope— | | | |
| Foreign | | | (nominal) |
| Domestic | 5.75 | " | — |
| Soft Jute Rope | 4.50 | " | 5.00 |
| Jute Carpet Threads | 3.00 | " | 3.50 |
| Bleachery Burlap | 8.50 | " | 9.00 |
| Scrap Burlap— | | | |
| Foreign | | | (nominal) |
| Domestic | 3.00 | " | 3.25 |
| South America | — | " | 3.25 |
| Wool Tares— | | | |
| Foreign | | | (nominal) |
| Domestic | 4.25 | " | — |
| Aust. Wool Pouches | — | " | 3.65 |
| New Zealand Wool Pouches | — | " | 3.50 |
| New Burlap Cuttings | 4.75 | " | 5.00 |
| Heavy Baling Bagging | 4.00 | " | 4.25 |
| Paper Mill Bagging | 2.50 | " | 3.00 |
| No. 2 Roofing Bagging | 1.35 | " | — |

* OPA Maximum Prices.

### Domestic Rags (New)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New Light Prints | .04½ | @ | .04¾ |
| Fancy Percales | .04¾ | " | .05 |
| New White No. 1 | .06¾ | " | .07 |
| New Light Flannelettes | .05½ | " | .06 |
| Canton Flannels, Bleached | .06 | " | .06¾ |
| Underwear Cutters, Bleached | .06¼ | " | .06¾ |
| Underwear Cutters, Unbleached | .05¾ | " | .06 |
| Silesias No. 1 | .06 | " | .06¾ |
| New Black Silesias | .03 | " | .03¾ |
| Red Cotton Cuttings | .03½ | " | .04 |
| Soft Unbleached | .06½ | " | .06¾ |
| Blue Cheviots | .05½ | " | .06 |
| Fancy | .02¾ | " | — |
| Washable | .02¾ | " | — |
| Khaki Cuttings | .02¾ | " | .03 |
| O. D. Khaki | .03½ | " | .03¾ |
| Corduroy | .03¼ | " | .03½ |
| New Canvas | .06¼ | " | .06½ |
| B. V. D. Cuttings | .06¼ | " | .06½ |

### Domestic Rags (Old)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked | 3.80 | @ | —* |
| Miscellaneous | 3.20 | " | —* |
| White No. 2— | | | |
| Miscellaneous | 2.65 | " | —* |
| Twos and Blues, Repacked | 2.20 | " | —* |
| Old Blue Overalls | 2.25 | " | 2.30 |
| Thirds and Blues, Repacked | 2.20 | " | —* |
| Miscellaneous | 1.80 | " | —* |
| Black Stockings | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| No. 1 | 1.55 | " | —* |
| No. 2 | 1.45 | " | —* |
| No. 3 | 1.35 | " | —* |
| No. 4 | 1.35 | " | —* |
| No. 5, Quality A | 1.35 | " | —* |
| Quality B | 1.20 | " | —* |
| Quality C | .95 | " | —* |
| Old Manila Rope | 5.75 | " | —* |

* OPA Maximum Prices.

### Foreign Rags

(F. o. b. Boston)

| | |
|---|---|
| Canvas | (nominal) |
| Dark Cottons | (nominal) |
| Dutch Blues | (nominal) |
| New Checks and Blues | (nominal) |
| Old Fustians | (nominal) |
| Old Linsey Garments | (nominal) |
| New Silesias | (nominal) |

## CHICAGO

### Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| No. 1 Soft White Shavings | 2.50 | " | — |
| No. 1 White Ledger | 2.30 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| White Blank News | 1.65 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| Overissue News | 1.10 | " | — |
| No. 1 News | 1.00 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| No. 1 Roofing Rags | 1.55 | " | — |
| No. 1 Roofing Bags | 1.45 | " | — |

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## HELP WANTED

Wanted: Night Superintendent for Specialty Coated Paper Mill, capable of taking full charge. Give age, experience, and salary expected in first letter. Address Box 46-455 care Paper Trade Journal. J-25

**WANTED**

Plant Engineer for two Machine Mill, at Walloomsac, N. Y. Revamping and rebuilding with extensive expansion program under way including Corrugating Box equipment. Experience in Power, Steam, Turbine and paper making required. Do not reply unless qualified. State age, experience and education, salary expected. Walloomsac Paper Mills, Inc., 23 Vanderbilt Avenue, New York 17, N. Y. J-25

**PROCESS ENGINEER**
**Wanted**

With wide experience in pulp and paper making processes. Must be able to develop flow diagrams and specify related equipment. Excellent opportunity for the right man. Please furnish complete experience record.
Address Box 46-261 care Paper Trade Journal. TF

**SALARIED POSITIONS**

$2,500-$25,000. This thoroughly organized confidential service of 36 years' recognized standing and reputation carries on preliminary negotiations for supervisory, technical and executive positions of the calibre indicated. Retaining fee protected by refund provision. Identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.

**WANTED**

We have an opportunity for a man experienced in the conversion of facial tissue, familiar with the Toall folder, Container Equipment gluers and automatic boxers. Salary is entirely dependent upon how valuable you make yourself to us. Permanent, responsible job. Complete history of your experience and preferably a picture with your reply. Vicinity New York City.
Box 46-427 care Paper Trade Journal. A-15

**WANTED**

2 Machine Tenders and 2 Back Tenders for 104" Fourdrinier Machine making Board, 2 Machine Tenders and 2 Back Tenders for 82" trim, three-cylinder Machine making Board.

Mill planning extensive expansion and reconversion program.

Write to Box No. 46-424 giving experience, references, etc.
J-25

## HELP WANTED

CHARLES P. RAYMOND SERVICE, INC.
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Specializing in Paper Mill Personnel
Positions Now Open
Mechanical or chemical engineering graduate with felt mill experience $500-600 month
Technical director for tissue mill
Draftsman $90
Working master mechanic or boss millwright
Cost accountants (several)
Chemists
Machine and back tenders, beater engineers, etc.
We invite correspondence (strictly confidential) with paper and pulp mill executives seeking new positions and with employers seeking new personnel. J-18

**WANTED**

Tour Boss, Machine Tenders, Back Tenders, Third Hands, familiar with manufacturing toilet, napkin, facial tissue, in an Eastern mill. Reply to box—46-466 care Paper Trade Journal. J-5

**WANTED**

Eastern chemical company is in need of a chemist or chemical engineer for research and development work in the field of chemical products for paper mills. Man with graduate training, diversified experience in the paper industry and demonstrated research ability is desired. Excellent opportunities for qualified person. Address reply to Box 46-473 care Paper Trade Journal. A-1

**WANTED**

Long established, nation-wide organization with extensive expansion program under way, is in need of an experienced Tour Boss familiar with Felt Mill operations, to be trained for Assistant Superintendent job at its New Orleans Plant. Exceptional opportunity for right man. Send complete resume giving experience, education, salary desired, etc., to Box 46-474 care Paper Trade Journal. J-25

**WANTED**—Foreman or Superintendent having experience in embossing and embossing machines and methods. Must be able to rebuild, improve and devise. Address Box 46-428 care Paper Trade Journal. A-15

**WANTED**—Man experienced in running Hamblet Sheeting Machine. Address Box 46-452 care Paper Trade Journal. J-18

**CHEMICAL ENGINEER** for applied research and development relating to pulping and papermaking. Especially interested in person thoroughly familiar with pulping technics and from 3 to 5 years experience. Give full details in letter to The Institute of Paper Chemistry, Appleton, Wisconsin. J-18

**WANTED** — Man familiar with paper stock grades to take charge of the Receiving Dept. of a one-machine mill making the better grades of boxboard. Good salary plus a bonus. Also **WANTED** Millwrights familiar with board mill operation. Good hourly rate plus bonus. Address Box 46-359 care Paper Trade Journal. JI-18

**WANTED**—Machine Tender experienced in tissues made on cylinder machine. Good wages, steady work, references required. Address Box 46-479 care Paper Trade Journal. A-1

**WANTED**—Foreman for Toilet Tissue Converting Dept. in the East. Must have knowledge of Paper Converting Co. napkin folders. Give full particulars and salary desired to Box 46-472 care Paper Trade Journal. J-18

## SITUATIONS WANTED

**MILL REPRESENTATIVE** covering the jobbing and direct trade for the past 15 years from Pennsylvania through to the Carolinas, now desires to operate over the same territories with 2 or 3 non-conflicting lines. What have you to offer? Address Box 46-412 care Paper Trade Journal. TF

**WANTED** — Position as Chief Engineer — 18 years of experience in Power Plant operation, heat balance and Plant efficiency. Age 40. Best of references. Address Box 46-449 care Paper Trade Journal. J-18

**CHEMIST, EXPERIENCED, QUALITY AND TECHNICAL CONTROL,** New England or Eastern New York preferred. Address Box 46-460 care Paper Trade Journal. A-8

**PRODUCTION ENGINEER** — Ex-Superintendent on cylinder specialties, a practical papermaker who can produce quantity with quality. Can also solve manufacturing problems, large or small. Address Box 46-458 care Paper Trade Journal. J-25

**POSITION WANTED** — Superintendent practical papermaker. 30 years experience in the manufacture of folding boxboard and cylinder specialties. Address Box 46-459 care Paper Trade Journal. A-1

**NIGHT OR TOUR BOSS** on folding and test grades. Can report at once. Address Box 46-478 care Paper Trade Journal. J-25

**PAPER SALESMAN'S TERRITORY** in South desired by ex-GI, long associated with some phase of printing. Age 46. College educated. Address Box 46-477 care Paper Trade Journal. J-18

**ENGINEER-DRAFTSMAN:** Wishes position. 25 years Pulp and Paper Mill mechanical and structural design, construction, maintenance. Prefer New England location with concern desiring man with general experience. University graduate. Address Box 46-475 care Paper Trade Journal. J-25

**CHEMIST**—Veteran, intelligent, ambitious, married. Graduate Pulp and Paper Dept. New York State Forestry College. Fourteen months experience plastic research. Desires supervisory, laboratory or research work in paper field. Available immediately. Contact: Roy Traver, 61 Chestnut St., Rhinebeck, N. Y. J-18

**AMBITIOUS COLLEGE GRADUATE**—Single; 25 years excellent adm. background; veteran; exp. in paper stock; interested in permanent position with future in waste paper or paper industry. Illini Hall, 725 S. Wright St., Room 335, Champaign, Illinois. A-1

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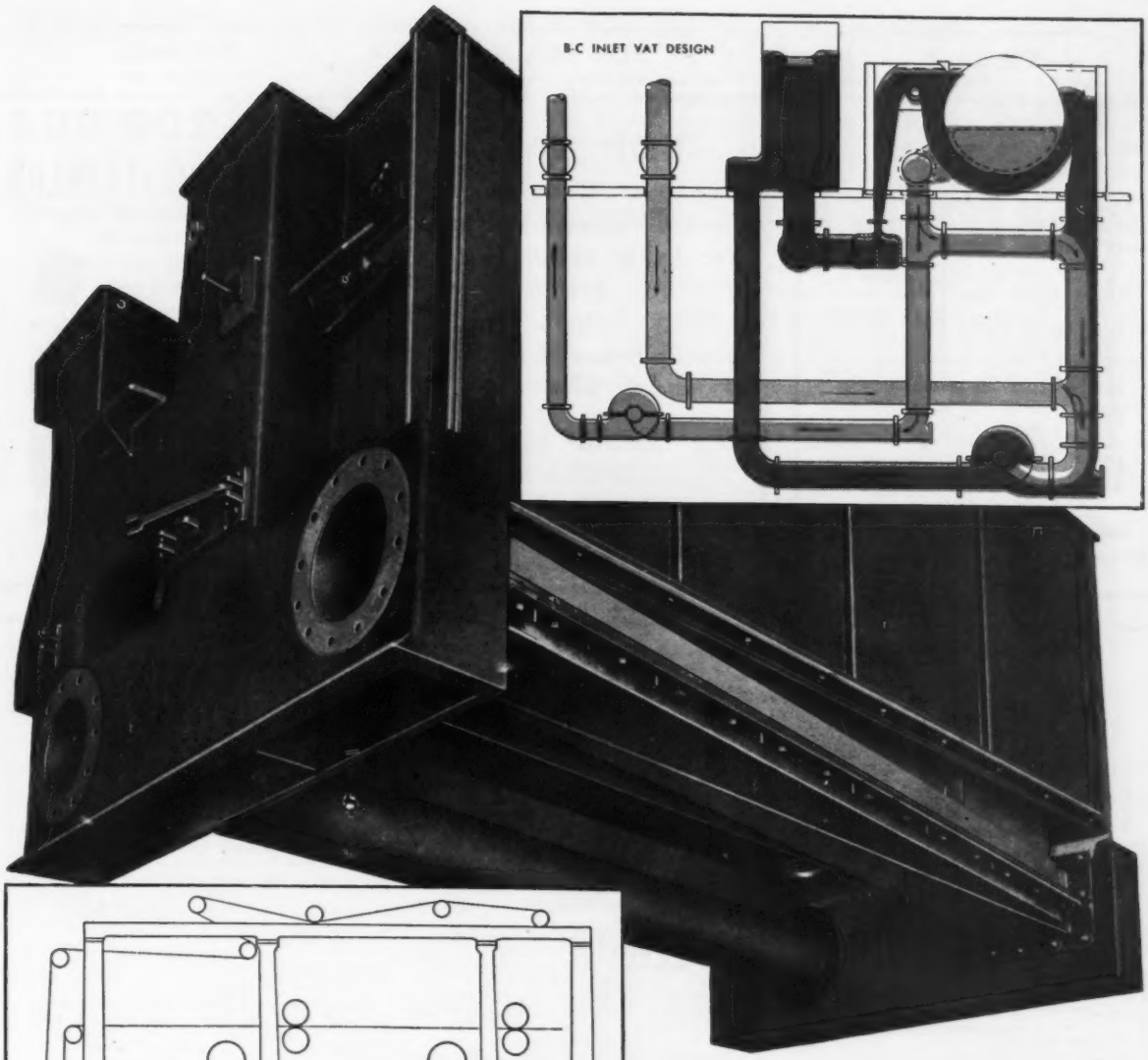


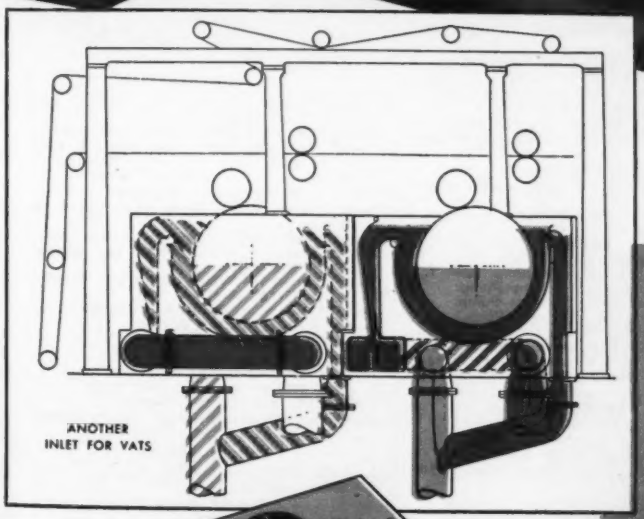


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1—Breaker Beater—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity. Equipped with Shartle Bros. Ragger.

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1—5 roll 84" face—Farrel.
1—6 roll—72" face.
1—7-roll 36" Holyoke Machine. (supercalender)

**CENTRAP**
1—Shartle Brothers Centrap.

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5—Bird Centrifiners, including motors and starters.

**COATING MACHINE**
1—26" six roll coating machine.

**CYLINDER MOULDS**
2—30" diameter x 74" face.
2—30" diameter x 54" face.
1—30" diameter x 75" face.
1—36" diameter x 84" face.

**DRIVES**
4—Smith & Winchester Drives.
1—Moore & White mortise gear drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 900 RPM to 418 RPM.

**DRYERS**
1—48" diameter x 60" face, anti-friction bearings. Creping dryer.
1—48" diameter x 94" face.
1—24" diameter x 84" face. (Baby)
2—36" diameter x 64" face, with frames gears and bearings.
2—25" x 120" (Baby Dryers).
2—30" x 120".
1—48" x 100".
11—30" x 80". (Steel Dryers).
5—24" x 76". (Steel Dryers).
2—36" diameter x 38" face.

**ERKENSATORS**
2—I. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

**FLAT SCREENS**
1—12 plate Murray Dunbar Flat Screen.
1—4 plate Flat Screen.

**JORDANS**
1—Noble & Wood Monarch, anti-friction bearings, direct connected to 125 h.p. synchronous motor.
1—No. 2 Miami Jordan.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble and Wood, Monarch, new fillings.

**LABORATORY EQUIPMENT**
1—Mullen Tester.

**MOTORS**
1—125 h.p. synchronous motor—including starting equipment. (450 r.p.m.)
1—25 h.p. motor, including starting equipment.

**PRESS ROLLS (Rubber Covered)**
1—27½" diameter x 186" face.
1—26" diameter x 185" face.

**PULP EQUIPMENT**
1—84" Carthage Chipper (Four Knives).
1—32" three pocket Glens Falls Grinder (for 27" wood).

**PULP SCREEN**
1—IMPCO centrifugal pulp screen design No. 3.

**PULPER**
1—Jones Pulper.

**PUMPS**
1—10 x 11 Connersville Vacuum Pump.
1—10 x 7½ Connersville Vacuum Pump.
1—No. 4 Connersville Vacuum Pump.
1—6 x 2L Connersville Vacuum Pump.
1—No. 7 Sturtevant Vacuum Pump.
1—Buffalo Pump—$500 g.p.m. direct connected to 100 H.P. Motor (50' head).
*Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.*

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1—Taylor Stiles, 14", Little Giant.

**REELS**
1—72" Downingtown Expansion Reel.
1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—110" face.
1—Set Stack Reels, capacity trim 143".

**ROLLS**
500—Brass tube—steel tube—rubber covered iron rolls— various sizes.

**ROTARY SCREENS**
3—Moore & White Rotary Screens (alternating diaphragm type).

**SAVEALL**
1—Saveall 36" diameter x 96" face cylinder mold. (With iron end vat.)
1—Saveall 36" diameter x 96" face cylinder mold. (With wood vat.)

**SCREW PRESS**
1—Valley Iron Screw Press.

**SCREEN PLATES**
36 plates—43 x 11⅞"—.050 cut—bevel edges.
24 plates—Recently recut .008.
12 plates—Recently recut .035.
*Also other sizes and cuts in stock.*

**SHREDDERS**
1—No. 25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder.
1—Waterville Shredder.

**SHEETERS**
1—84" Finlay Sheeter, Erie Layboy and 9 roll backstand.
1—128" Moore & White Sheeter with layboy.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

**SLITTERS AND WINDERS**
1—36" Beck Razor Blade type Slitter & Winder
1—110" Beloit slitter (slitter attachment only).
1—60" Moore & White Slitter and Winder set for 5/8" slits.
1—60" Moore & White Slitter and Winder set for 7/16" slits.
1—120" Moore & White 4 drum slitter.
1—80" 2 drum Warren Winder.

**STOCK PUMPS**
1—12 x 20 Triplex Shartle.
1—10 x 20 Duplex Shartle Brothers.
1—10 x 12 open impeller. (All lead).
1—8 x 18 Downingtown Duplex.
*Numerous other Centrifugal Stock Pumps. Advise us to your requirements.*

**SUCTION BOXES**
1—Nash 100" face Suction Box.
1—Brass Suction Box—96".

**V-BELT DRIVES**
1—{23" diameter x 14" face, 10 grooves. {15" diameter x 14" face, 10 grooves.
1—{32" diameter x 21¾" face, 15 grooves. {14¾" diameter x 21¾" face, 15 grooves.

**WET MACHINE**
1—74" Moore & White.

**We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).**

# J. J. ROSS COMPANY

**250 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J.**

TELEPHONE
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CABLE ADDRESS: JACK ROSS

# ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

**1—Shartle Brothers 2 cylinders—120" machine. (Can supply four additional cylinders and vats). Machine includes:—2 pairs of baby presses, 3 pairs of primary presses, 2 pairs of main presses, 27 dryers 86" diameter x 115¼" face—3 deck—spare cylinder mould and couch. Drives, stands, line shaft and pulleys. Blue prints available.**

**AIR HOISTS**
2—Two-Ton Ingersoll Rand
2—Five-Ton Ingersoll Rand

**ATTRITION MILL**
1—Sprout Waldron direct connected to two 20 H.P. motors—3 phase—60 cycle—440 volts.

**BEATERS**
2—1000 lb. Horne Iron Tub.
1—1200 lb. Holyoke Wood Tub.
4—Valley Iron 750 lbs. Iron Tub Beaters, with Silent Link Belt Drive.

**BIRD SCREEN PLATE**
26 Plate—60 cut. New condition.

**BLOWERS**
1—American ball bearing blower, size 17" x 23" for motor drive.
1—American Blower, size 40. For belt drive.

**CALENDER DOCTORS**
1 set of 16 Warren Doctors 104" face with frames.

**CALENDER ROLLS**
30 rolls various sizes

**CALENDER STACKS**
1—6 roll Beloit, 110" face.
2—2 roll Holyoke 36" face.
1—9 roll Moore & White—82" face.

**CONVERTING EQUIPMENT**
4—Sanitary Napkin Machines. With motors and starters.
1—Bliss Double Head Stitcher.
4—Waterville Grinders.
1—36" Waldron Reeling Machine.
1—39" Dampening Machine.
1—36" Brush Coating Machine.
1—Copper Mixing Tank with agitator—40 gal.
1—Cast Iron Kettle 20" x 24" 2 outlets.

**CREPING MACHINE**
1—Complete Bagley & Sewall Creping Machine. Dryer 100" face x 48" diameter. Ball bearing equipped. Used 6 months.

**CYLINDER MOLDS**
3—Impco—84" face—40" diameter with stainless steel face wire.
2—110" face x 36" dia.
1—90" face x 36" diameter—with ball bearings and cast iron end vats.
6—84" face x 36" diameter.
4—Cylinder Molds—cast iron end vats—cylinders 120" face x 36" diameter. Ball bearing.

**DANDY ROLLS**
2—122" face 10" dia.
1—138" face 12" dia.
1—129" face 9½" dia.

**DRIVES**
1—Falk 25 h.p.—7.5 to 1.—1750 r.p.m.

**DRYER DOCTORS**
40—Warren Doctors. Various sizes.

**DRYERS**
36—28" diam. 96" face 2 deck frames Beloit.
82—48" Dia. x 46" Face, Chromium Plated.
2—24" Dia. x 48" Face.
4—48" diameter x 70" face.

**ELECTRIC HOIST**
1—Sprague Electric 3 ton hoist—5 h.p. 3 phase —60 cycle—110 volts.

**FLAT SCREENS**
1—8 plate Sandy Hill Packer—roller shoes.
1—10 plate Packer screen with scraper.

**FOURDRINIER SHAKES**
1—Beloit Fourdrinier Shakes.
1—Sandy Hill Bertram Shake. Late type.

**FOURDRINIER WET END**
1—120" Beloit Fourdrinier Wet End.
1—74" Pusey & Jones Wet End.

**GRANITE ROLLS**
2—112" face 20" diameter.

**HAMMERMILLS**
1—American Hammermill—37" anti friction bearing equipped.
1—Jeffrey Swing Hammer size 18"x24"—Type A.
1—Williams 18" Hammermill Ball Bearing.

**HOG**
1—Mitts & Merrill Hog. Number 8Z52.

**JORDANS**
2—E. D. Jones Majestic Jordans, with one new set of fillings for both plugs and shell—belt driven.
2—#2 Miami Jordans—motor driven.
1—Noble & Wood Pony—belt driven.

**MISCELLANEOUS**
2—Nugent Oil Filters (new).
1 Shartle Brothers cast iron Riffler or Settling Trough, 72' long, 6'7" wide.

**MOTORS**
1—Westinghouse 200 h.p.—285 r.p.m.—440 volts —3 phase—60 cycle.

**PLATERS**
2—Holyoke 2 Roll 18" dia. 36" face.

**PULLEYS**
60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

**PULP EQUIPMENT**
1—Economy Electric Pulp Baler.
1—Cailloux 4 pocket 27" grinder. Ball bearing equipped
1—120" face Kamyr Press.
1—84" Sumner Disc Barker with motor.

**PULPERS**
1—Sturtevant Bale Pulper with conveyor & motors used three years.
1—Voith Pulper 20 tons cap.

**PUMPS**
4—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 550 r.p.m.
1—DeLaval 6" x 6".
1—DeLaval 1800 g.p.m. 30' Head, 900 r.p.m.—8" Suction—10" Discharge, Ball Bearing—Belt Driven—or for Direct Connection to Motor Open Impeller.
15—Worthington Close Coupled Centrifugal Pumps. 6" x 6" 650 g.p.m. 25' head. 6 h.p. Star Electric splash proof motor. 1750 r.p.m. 440 volt, 3 ph.-60 cycle, ball bearing.
16—Warren Vertical Pumps. 6" suction. 3" discharge. 135 g.p.m. 80' head. Direct Connected 6 h.p. General Electric motor. 1750 r.p.m. 440 volts, 3 ph.-60 cycle, ball bearing.
1—Warren Close Coupled Centrifugal Pump. 3" suction. 2" discharge. 60 g.p.m. 90' head. 6 h.p. General Electric 1720 r.p.m. 440 volts, 3 ph-60 cycle, ball bearing. All the above pumps and motors are in excellent condition and are of bronze construction.
2—Worthington 3" 2 stage. 200 g.p.m. 224' head. Bronze Ball Bearings.
2—Warren Double Suction Ball Bearing, 6" Suction—14" Discharge—800 g.p.m., 250' Head—1150 r.p.m.
4—Pusey & Jones Open Impeller, 10" Stock Pumps, Belt Driven.
2—8" Pusey & Jones Open Impeller Stock Pumps, Belt Driven.
1—Worthington 400 g.p.m. 35' head 1750 r.p.m. Ball bearing.
1—15" Buffalo—4000 g.p.m.—70' head. For direct connection to motor.
2—La Bour Company self priming ball bearing pumps. 2½" suction, 2½" discharge. 150 g.p.m.—30" head with extended base for motor.
1—Domestic Pump ball bearing—250 g.p.m., 4" suction, 3" discharge—30' head with extended base for motor.
1—Mario ball bearing pump—420 g.p.m.—100' head, 4½" suction, 3" discharge. With extended base for motor.

**REELS**
1—Black-Clawson 2 Bowl—120" face. Takes 60" diameter roll.

**REFINERS**
2—#1 Claflin Refiners. Bronze construction.

**ROLLS**
40—Table, Dress, Felt, Wire, Breast and Calander Rolls Various Sizes.

**ROTARY COOKER**
1—Rotary Cooker—6' dia. x 21' long—complete with drive.

**ROTARY DUSTERS**
2—E. D. Jones Steel cage down draft dusters (wing type). 48" diameter—14'6" long.

**ROTARY SCREENS**
2—#2A Bird with copper vats.
2—#2 Bird with copper vats.
2—#1 Bird with steel vats, lead lined.
4—Moore & White.

**RUBBER COUCH**
1—82" face x 18" diameter.

**RUBBER PRESS ROLLS**
1—185" Face—26" Diameter } Used 20 Days
1—186" Face—27½" Diameter }
1—119" Face—19½" Diameter.
1—109" Face—17½" Diameter.
1—120" Face—19" Diameter.
1—118" Face—18" Diameter.
1—120" Face—18" Diameter.
1—107" Face—18" Diameter.
1—106" Face—18¼" Diameter.

**SAVEALLS**
1—A. D. Wood cylinder 48" dia. 60" face.
1—Dorr Company No. 40 ADKA Saveall 340-440 GPM. Used 1 month.

**SCREW PRESS**
1—Valley Iron Screw Press. Used 2 years.

**SHEETERS**
1—90" Beloit Single Knife heavy duty.

**SHREDDERS**
2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder.

**SLITTERS AND WINDERS**
82" Warren two drum—fully rebuilt.
1—41" Waldron Slitter and rewinder. Roll embossing attachment.

**SILL PLATE—CAST IRON**
300 Ft. 12" wide 1" thick.

**STUFF PUMPS**
1—10" x 20" Shartle triplex.
1—12" x 20" Shartle triplex.
2—4" x 10" Shartle Duplex direct connected to 3 h.p. gear head motors.

**SUPERCALENDER STACKS**
1—7 roll Norwood 72" face; 4 paper and 3 iron rolls. 1 new spare paper roll.
1—7 roll Norwood 52" face; 3 paper and 4 iron rolls 1 new spare paper roll.
1—9 roll Norwood 83" face. Bottom roll 24" diameter. Top roll 20" diameter.

**TRIMMER**
1—63" Seybold.

**TURBINES**
2—General Electric Turbine Paper Machine Drive 250 h.p.—350 r.p.m. 125 lb. steam pressure 30 lb back pressure.

**UNWINDERS**
1—42" John Waldron Unwinder. Used 1 year.

**VACUUM PUMPS**
1—14" x 20" Connersville.
1—#1 Nash—for direct connection to motor.

**WASHERS (Beaters)**
1—84" face—45" diam. with rigging. New.

**WET MACHINES**
1—76" Pusey & Jones Cylinder Mould, 70" face —38" diameter with rubber couch, 19" dia.

**YANKEE DRYERS**
2—Beloit 8' dia. x 175" face—75# working pressure.
1—Beloit 5' dia. x 194" face—75# working pressure.

**THE ABOVE IS A PARTIAL LIST OF EQUIPMENT OFFERED FOR SALE.**

**AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY**

We buy single items to complete Pulp and Paper Mills.

## FOR SALE

**REVAMPING AND REBUILDING MILL AND CAN OFFER FOR SALE**

1—Noble & Wood Mammoth Jr. Jordan ¼" Filling. Now operating.
1—4000# Capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
1—6" Lawrence Centrifugal Water pump.
1—Buffalo Centrifugal Stock Pump—8".
2—8" Barnes Centrifugal Sewage Pumps.
8—100" Screen plates for No. 2-A Bird Screen. Slots. .022—never used after being recut once.
1—Rubber covered press roll 12" diameter by 68" face—Journals 5" diameter by 7¼" long.
1—Rubber covered press roll 12" diameter by 84¼" face—Journals 5" diameter by 7¼" long.
1—20" face cast iron tapered pulley—2-15/16" Bore, Taper 31"—29½".
2—20" face cast iron tapered pulley—3-7/16 Bore, Taper 31"—30".
1—24" face cast iron tapered pulley—3-7/16" Bore, Taper 31⅝"—29⅜".
2—Steel split pulleys 60" diameter by 31" face —5-15/16" bore.
1—Cast iron split pulley—60" diameter by 21" face by 3½ bore.
1—Cast iron split pulley—40½" diameter by 21" face by 3½ bore.
1—Cast iron split pulley—84" diameter by 36" face by 5-15/16" bore.
1—Solid cast iron split pulley—72" diameter by 16" face by 16" face by 8⅝" bore.
2—Steel split pulleys—60" diameter by 31" face by 5-15/16" bore.
1—Paper pulley—24" diameter by 21" face by 4½" bore.
1—Tapered cast iron split pulley. Taper 30" to 28½" by 20" face by 3-15/16" bore.
1—30" x 80" Cylinder Mould—7" diameter shaft inside cylinder.
1—6½" Diameter x 85" Face Rubber—covered squeeze or wringer roll—Journals 1-15/16" diameter.
1—9" Diameter x 88" Face Calender roll—5" diameter journals.
12—6½" Dia. x 82" face steel dryer felt rolls with 1-7/16" x 6½" Journals.
2—4" Gould centrifugal stock pumps with 2 vane open impeller. Capacity 600 G.P.M. at 40' head—1175 R.P.M. with 10 H.P. Operated less than two years
2—Pair Noble & Wood lighter stands complete with lighter beams and bearings for 8" diameter journal beater roll.

**A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See our superintendent, Mr. O. P. Fussell at our plant in Walloomsac, New York.**

**WALLOOMSAC PAPER MILLS, INC.**
**MILLS: Walloomsac, New York**
**MAIN OFFICE: 25 Vanderbilt Avenue**
**New York 17, N. Y.** TF

## FOR SALE

New brass covered felt or wire rolls 6¾" dia., 84 to 120" face. These are made from government surplus and are new in all respects.

**Osborne Paper Mill Equipment Co.**
**Fulton, N. Y.** TF

## FOR SALE

1—156" Hamblet cutter, duplex, extra heavy, with layboy

**Box No. 46-446 care Paper Trade Journal.** J-25

**FOR SALE**

1—12" Weiner Refiner Complete with New Spare Plug Shaft Assembly.
1—Spare shell liner.
3—Sets spacer rings.
1—Extra Thrust Bearing.
1—Extra Main Bearing.

Address Box 46-476
care Paper Trade Journal. J-25

**FOR SALE — COMPLETE 62" BELOIT LAMINATOR. WILL PASTE UP TO 4 PLYS BOARD FROM ROLLS PRODUCING SHEETS ALL LENGTHS. WITH SLITTERS, MOTOR, REEVES DRIVE. ETC. ADDRESS BOX 46-395 care Paper Trade Journal.** J-18

## FOR SALE

**FRANK H. DAVIS CO.,**
ESTABLISHED 1889
USED AND REBUILT PAPER MACHINERY.

1—110" four drum Moore & White winder with slitter part, 15" diameter drums, winds 60" diameter roll, excellent condition.
6—12 plate Packer Screens.
2—Forced draft Buffalo fans, size 6½.
2—2800 lb. iron tub broke beaters.

**PULPERS**

1—E. D. Jones Pulper, No. 21, direct connected through Falk reducer to 50 HP induction motor, type K., G.E. magnetic reversing switch and push button station.

1—Jones Pulper, No. 33, one speed reducer, 40 HP induction motor, reversing switch and push button station.
Both pulpers new in 1938.

**SHREDDERS**

3—Mitts Merrill No. 15 CF right hand pulp shredders, 36" dia. cylinders, removable shell type bearings, coupled motor drive. One is equipped with 125 HP variable speed motor and controls; one is equipped with motor without the control and one shredder is without motor or control.

**KNIFE GRINDER**

1—90" Covel and Hanchett knife grinder, size 90 D, purchased new in 1938.

**LIFT TRUCK**

1—Lewis Shepard Lift Truck, type NHF, model ST, capacity 3500 lbs. Lift 5". Platform 48" x 42". Low 5", high 5". New 1937.

**CONVEYOR**

1—Alvey Horizontal Carton Conveyor, 98 ft. centers, two strand 3 pitch roller chain, 2½ x 2¼ x 20 maple flights, 3" on centers.

**Builders of**
**ASPHALT COATING, COMBINING MACHINE, GUMMING AND CREPING MACHINE, ROLL GRINDER**
**FRANK H. DAVIS COMPANY**
**175 Richdale Ave., Cambridge, Mass.**

**PAPER MILL EQUIPMENT**
**For Sale**

52" Hamblet Sheeter.
110" Hamblet heavy duty mill type Sheeter.
36" Langston Slitter.
63" Oswego hand-clamp Power Cutter.
38" & 54" Automatic Power Cutters.
3—14 x 22 John Thomsons.
36" Waldron Reel.
American heavy duty Cross-Cut Saw.
NEW BALING PRESSES, hand & power.

**THOMAS W. HALL COMPANY, Inc.**
**120 West 42nd St., New York 18**

## FOR SALE

8—New Shartle iron tub beaters with rolls 80" dia., 55" face, anti-friction bearings, stainless steel hoods, ideal for broke beaters, batch breakers or washers, capacity about 4000#.

**Osborne Paper Mill Equipment Co.**
**Fulton, N. Y.** TF

FOR SALE—38" Oswego Automatic Clamp Cutter, fully rebuilt and guaranteed. Address Box 46-481 care Paper Trade Journal. J-18

## FOR SALE

**FOR SALE**

1—Valley Iron Works Pulper, with motor Capacity 1000# per hour
1—84" 4 knife chipper
1—No. 1 A Bird screen, .014 cut plates
2—6 plates screens (Sandy Hill)
3—10 plate Waterous screens
1—2L Connersville vacuum pump
1—8 x 10 Connersville vacuum pump
1—72" Wet machine (Good condition)
1—84" Heavy duty Hamblet cutter

**FRANK P. LYDEN, FORT EDWARD, N. Y.** J-18

**FOR SALE**

New and guaranteed used steel pipe and boiler tubing suitable for paper cores and all other purposes. Also, valves, fittings, wood and steel tanks and steel buildings.

**JOS. GREENSPON'S SON PIPE CORP.**
**NAT'L. STOCK YARDS,**
**ST. CLAIR CO., ILL.** JL-25

FOR SALE—Paper Tube Machinery—four semi-automatic convolute paper tube winding machines equipped with motors and mandrels. Two 48" Paper Sheet pasting machines with motors. Write American Paper Products Co., 2113-37 East Rush Street, Philadelphia 34, Pa. A-1

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore 30, Md. TF

FOR SALE—6 New Unused Natural Stones for Carthage 3 Pocket Grinder. 32" face, 56" diameter, 2X Grade. Fort Howard Paper Company, Green Bay, Wisconsin. J-18

PAPER COATING MACHINERY — Waxing, Oiling, Gumming, Gluing, Carbon, Laboratory Coating and Treating Machines. High speed. New improvement. MAYER MACHINE COMPANY, Inc., 1155 Scottsville Road, Rochester, 11, N. Y. TF

FOR SALE—Beloit 116" Slitter—3 top slitter brackets no blades—3 bottom slitters complete. Thomas Paper Stock Company, 860 West Evergreen Ave., Chicago, 22, Illinois. TF

FOR SALE—3 Double Head D-2 Bliss Assembly Stitchers. 3—33" Model RFA Bliss Power Lift Top Stitchers. Equipped with 3 phase, 60 cycle, 440 volt, AC motors. This equipment is in excellent condition. Fort Howard Paper Company, Green Bay, Wisconsin. J-18

FOR SALE—Moore & White Style K.T. Duplex Cutter with one Revolving Duplex Slitter having 94" length of knives and three each top and bottom Slitters on each of two slitter shafts and with a two reel unwinding backstand. Ready for immediate shipment. Theo. Adams, 111 West Washington St., Chicago, 2, Ill. A-28

FOR SALE—52" Hamblet Sheeter—no slitters or back-stand or layboy. Address Box 46-465 care Paper Trade Journal. J-18

FOR SALE—Norwood Super Calender 56" width Nine rolls steel and cotton. This calender has new bearings and bearing oiling system and is equipped with Foxboro pneumatic loading. Condition excellent. Address Box 46-480 care Paper Trade Journal. A-1

FOR SALE—3' Hydrapulper in good operating condition. Address Box 46-469 care Paper Trade Journal. J-18

## WANTED

**WANTED**

**Jumbo rolls Kraft or other wrapping papers any amount. Write—Box 46-467 care Paper Trade Journal.** J-18

FOR SALE | FOR SALE | FOR SALE

# TARENTUM PRODUCTS CORP.

## TARENTUM, PENNSYLVANIA

1—Majestic Jordan #A-235, complete with new filling, 3/16" tackle, No. 6 Fast Jordan Couplings, and following drive:
1 Westinghouse Induction Motor type CS 375 HP 2300 V 3 ph 60 cy 97 amp. 380 RPM Ser. #1463196, complete with one control panel, including one Westinghouse 300 amp. Oil Circuit Panel.
1 set Disconnect Switches.

1—Westinghouse DC Motor 75 HP 230 V 265 Amp 575 RPM Frame 183 Serial #4778560. Complete with starting control, circuit breaker and meter.

1—Elliott Water Pump, capacity 500 gallons per minute. Serial #37075. Direct connected to one G.E. Motor 25 HP DC Type CD 85-230 91.3 amps 1750 RPM Ser. #1530365. Complete with one starting control and switch.

1—Westinghouse Generator 70 KW 250 V DC 280 amp. 375 RPM Ser. #345451, with one Field Rheostat, one two-pole circuit breaker 600 amp., one Westinghouse 500 amp. amster and shunt. This Generator driven by Buckeye Steam Engine, 100 lbs. steam pressure engine #5156.

1—2000 KW A.C. Turbine Generator complete with all accessories.

1—Allis-Chalmers Induction Motor 250 HP 870 RPM 2200 V 3 ph 60 cy 59 amp Serial #2K13566.1.

1—G.E. Induction Motor type KT 326-6-25-1200 Form B 3 ph 60 cy 220 V 25 HP 61 amp. 1200 RPM Ser. #1053934 complete with one G.E. Oil Switch Type F Form K26 80 amp. 600 V Ser. #368400.

1—G.E. Starting Compensator CR 1034 220 V 3 ph 60 cy Type NR 1622.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp. Ser. #1180132.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp.

1—Westinghouse 30 HP D.C. Motor 220 V 117 amp. 975 RPM Ser. #233501.

1—G.E. Motor DC Type MP Form H 20 HP 1025 RPM 220 V 70 amp. Ser. #19830, complete with manual starting equipment.

1—104" Sheet Cutter complete with stands for 10 rolls and layboy.

1—G.E. Motor DC Type RC30 Form A 15 HP 850 RPM 230 V 53.5 amp. Ser. #957750, complete with variable speed control for armature and field.

1—G.E. Motor DC 7.5 HP 230 V 30.2 amp. 850 RPM Type RC-29A Form A29 Ser. #1145541.

1—G.E. Motor DC 10 HP 230 V 375.1 amp. 850 RPM Type RC 29 Form A29 Ser. #1148660.

1—Westinghouse DC Motor type S 5 HP 220 V 21 amp. 1300 RPM Ser. #112692.

1—G.E. Motor DC 35 HP 129 amp 230 V 700 RPM DLC 202 Form A Compound Ser. #434542, complete with starting control.

1—G.E. Induction Motor (slipring) Type IE 13AA-4-150-1800 Form M 3 ph 60 cy 2200 V 150 HP 34.5 amp 1745 RPM Ser. #3884576 complete with panel. One G.E. Switch Panel Type ATI 59008, one Drum Controller and Resistance, variable speed.

1—Allis-Chalmers DC Motor 10 HP 220 V 500 RPM #38637.

1—Commercial DC Motor 10 HP 230 V 40 amp 730 RPM Ser. #3609, complete with variable control.

1—Master Electric Worthington Pump and Motor. Pump is good for 100 gal. per minute 5 HP motor 230 V DC 3425 RPM Ser. #CC-3495.

1—Robbins & Myers Hoist ½ HP 230 V DC 400 RPM Ser. #M71309KH.

1—Master Electric Gear Head Motor 1 HP 230 V DC 1725 RPM Ser. #CE853.

1—Shepard Liftabout Electric Hoist 2,000 lb. capacity 230 V DC Ser. #11339.

1—Wright Electric Hoist 1,000 lb. capacity 230 V DC 1200 RPM Ser. #27668.

3—ILG Ventilating Fans ¼ HP 230 V DC 855 RPM.

2—G.E. CP 27 Compressor Head Air Pumps 230 V DC Complete with pressure line switches.

1—Allis-Chalmers DC Motor 5 HP 220 V 1050 RPM Ser. #44037.

1—Westinghouse DC Motor 10 HP 40 amp 230 V 1725 RPM Frame 60L Ser. #143833.

1—G.E. Motor DC Type C-27-B Form A112 10 HP 37.5 amp 230 V 1750 RPM Ser. #1454993, complete with control.

1—Cameron #10A Rewinder #36836, trim 44".

1—Cameron #10 Rewinder #30272, trim 64".

1—Daniels Rag Cutter #2.

1—Horizontal Rotary Digester 7' dia. 22' long, with gearing reduction.

1—Horizontal Rotary Digester 8' dia., 29' long, with gearing reduction.

1—Bucket type conveyor elevator. Buckets size 5" x 17", approximately 48' long, lifts on incline approx. 15'. All steel construction with Rex Chain Drive, complete with one Foote Bros. gear reducer type 25W, 43 to 1, Ser. #188052, driven by one G.E. DC Motor type RC27A Form A-38 5 HP 19.1 amp. 230 V 1150 RPM.

1—R40 Reducer, 12 to 1 ratio.

1—Slat Conveyor steel construction 4' wide, 3' high, 42" long, driven by one Jones Spur Gear Reducer, ratio 27 to 1, Ser. #10135. Driven by one Sprag electric DC Motor type LC 10 HP 37.2 amps 230 V 100 RPM Ser. #DL 2005213, complete with sheaves and V-Belt drive, one Westinghouse Automatic Starter.

1—John Waldron Corrugator #711.

1—Thorpe Hydraulic Press complete with 4 steam platen plates 40" x 40", and one Equalizer Pump.

1—Four cylinder Holyoke Duster.

1—Two-color rotary printing press, with various plates and printing rolls. Will handle 30" wide rolls of paper.

1—Heavy Duty Smith & Winchester Tuber #3369, with tuber attachments No. 4052 and No. 4053.

1—Frank A. Jones Tuber No. 1809.

1—Smith & Winchester Bottomer No. 1810, size 1/16 bbl.

1—Smith & Winchester Bottomer No. 3525, size ¼ bbl.

1—Smith & Winchester Bottomer No. 4018, size ½ bbl.

1—Smith & Winchester Valver No. 2245, size ¼ bbl.

1—Printing Press, Cottrell Flat Bed No. 9645, one color.

1—Printing Press, Cottrell Flat Bed No. 9649, one color.

1—Printing Press, Cottrell Rotary, two color.

J-25

# FOR SALE

### GEAR REDUCERS

1—Linkbelt, Size DWVT-50 RH speed reducer. Input 465 RPM, Output 1.30 RPM. Input H.P. .226. Output torque 7360 lbs. Ratio 342. Service factor 1. Good condition.

2—D.O. James Reduction Gear Units, Size 503H, ratio 90. High speed 1750 RPM. A.G.M.A. rating. 2.8 H.P. Class 1. Good condition.

### WELDING MACHINES

5—Hobart portable D. C. welding machines. Model MR 300P. 300 amp. size. 220/440 volt, 3 phase cycle motors. Fair condition.

### PUMPS

2—Morris DS3M—Bronze fitted double suction ball bearing pumps, 4" suction, 3" discharge, rated 600 GPM at 65'. On base direct connected to 50 H.P. open, tri-clad 220/440 volts, 3 phase 60 cycle sleeve bearing motor. 1765 RPM. Motor Model 5K1405AB1. New.

2—Morris DS3M, Bronze fitted double suction ball bearing pumps, 4" suction, 3" discharge, rated 400 GPM at 35'. On base direct connected to 20 H.P. open, tri-clad, 220/440 volt, 3 phase, 60 cycle sleeve bearing motor. 1760 RPM. Motor Model 5K 1364 AA1. New.

1—Size #2, Figure 4022, Deming Mueller end suction centrifugal pump, direct connected on base to Westinghouse type CS enclosed, fan cooled ball bearing motor. 5 H.P. 1740 RPM, 440 volts, 60 cycle, 3 phase. Frame #254. Style 1084852. Good condition.

2—Buffalo end suction close coupled pumps, bronze fitted, rated 30 GPM at 20' head. Size #2, Louis Allis Type IS, Class 2 D, ¾ H.P. 1740 RPM, 220/440 volts, 3 phase 60 cycle, motors. 55 degree rise. Good condition.

2—Hydreco pump units, base, 15 gal. tank with gage glass, direct connected to Fairbanks-Morse open, ball bearing 10 H.P. motors. 1170 RPM, 220/440 volts, 3 phase, 60 cycle. New.

### MOTORS

3—Fairbanks Morse type QV, wound rotor motor, 60 H.P. open, ball bearing, 220/440 volts, 3 phase, 60 cycle, 1760 RPM, 40 degree rise, Frame GA 5045. Good condition.

1—G. E. type MT533 open wound rotor motor, sleeve bearings, 440/60 cycles, 3 phase, 1750 RPM, 40 degree rise, 60 H.P. Good condition.

1—G. E. type MT5011, Good condition. Same as above.

All above motors complete with drum controllers and magnetic starters.

4—Westinghouse type CS line start induction motors, enclosed and fan cooled, ball bearing, .15 H.P. 220/440 volts, 3 phase, 60 cycle, 1750 RPM, 55 degree rise. Frame 326, style #1078986. Excellent condition.

2—Louis Allis multispeed type OMS induction motor, 5 H.P. 440 volts, 3 phase, 60 cycle. Frame 324, rise 40 degrees. 1725 or 860 RPM. Open construction, ball bearing. Good condition.

2—Westinghouse type CS induction motor, totally enclosed, ball bearing, 1 H.P. 1160 RPM, 220/440 volts, 3 phase, 60 cycle. Frame 204, rise 55 degrees C. With Stearns magnetic brake for operation on 220 volts and Jones 40 HV 50-1 gear unit. Good condition.

2—G. E. totally enclosed fan cooled ball bearing induction motors, 1130 RPM, type KG-3 H.P. 220/440 volts, 60 cycle, 3 phase, 55 degree rise. Frame 254. Both on bases with 4 groove sheave and Geo. T. McLauthlin Co. magnetic brake for operation on 440 volts. Excellent motors.

1—Wagner, type RP1-A.C. Motor, 3 H.P. 1160 RPM, 220/440 volts, 3 phase, 60 cycle, 40 degree rise. Frame 254, open, ball bearing, Model 40E18J521. With 4 groove sheave and Geo. T. McLauthlin Co. Solenoid brake for operation on 440 volts. Good motor.

2—Westinghouse type CS, totally enclosed, fan cooled, 3 H.P. motor, ball bearings, 1150 RPM. 220/440 volts, 3 phase, 60 cycle, 55 degree rise, frame 254. Style 1071176. Excellent condition.

1—G.E. 5 H.P. totally enclosed, fan cooled, ball bearing induction motor, 1140 RPM, 220/440 volts, 3 phase, 60 cycle, 55 degree rise, Type K, frame 284. Model 5K284A164. Excellent condition.

### FANS

2—36" "Propellaire" fan #36C7 type CD, 16,800 CFM. Direct connected, Robbins & Myers, 2 H.P. 1725 RPM, 220/440 volts, 60 cycle, 3 phase, 55 degree rise. Inlet and outlet screens. New.

2—Type 48T-8 "Propellaire" fan type CD, 32,000 CFM, direct connected Robbins & Myers motor, 440/60 cycle, 3 phase, 3.5 H.P. 850 RPM. 55 degree rise. New.

2—Type CD, 30G-9 "Propellaire" fan, 10,900 CFM. Direct connected Robbins & Myers motor, 1 H.P. 1725 RPM, 220/440 volts, 3 phase, 60 cycle, 55 degree rise. Inlet and outlet screens. New.

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3—½ ton Yale Midget King electric chain hoists with trolley, 10' lift, 440 volts, 60 cycle, 3 phase motors. Two new.

11—½ ton Yale "Whiz" ball bearing trolleys for chain hoists. New.

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WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 46-32 care Paper Trade Journal. TF

WANTED—Twelve or more dryers, size to be 96" face. 104" shoulder to shoulder of journal. 42" dia. Address Weaver-Wall Company, Avery, Ohio. J-25

WANTED—Brightwood Box Machine. Address Box 46-33 care Paper Trade Journal. TF

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J-25

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TOILET WINDER wanted for experimental use. Perforator and slitter not necessary. Any condition or age. Hunter and Company, 1550 East 17th St., Cleveland 14, Ohio. J-18

WANTED—Napkin, towel, toilet, or shelf paper, etc. converting machinery. Address P. O. Box 158, Gardner, Mass. J-18

WANTED—80" Two-drum Rewinder. Address Box 46-464 care Paper Trade Journal. J-18

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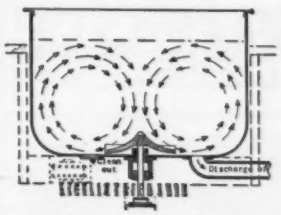

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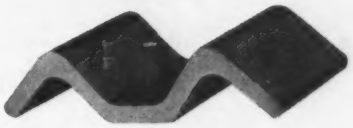

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**General Electric Co.**
**B. F. Perkins & Son, Inc.**
**Ross Engineering Co., J. O.**

### FEEDERS

**Fibre Making Processes, Inc.**
**Hardinge Co., Inc.**
**Merrick Scale Mfg. Co.**
**Leeds & Northrup**
**Wallace & Tiernan**

### FELTS

**Appleton Woolen Mills**
**Asten-Hill Mfg. Co.**
**Bloomfield Woolen Co.**
**Bulkley, Dunton Pulp Co., Inc.**
**Draper Bros. Corp.**
**Huyck & Son, F. C.**
**Lockport Felt Co.**
**Mt. Vernon-Woodbury Mills, Inc.**
**Morey Paper Mill Supply Co.**
**Orr Felt & Blanket Co.**
**Shuler & Benninghofen**
**Waterbury Felt Co.**
**Waterbury, H., & Sons Co.**

### FELT CONDITIONERS

**Steamaire Company**

### FELT GUIDES

**Moore & White Co.**
**The Sandy Hill Iron & Brass Wks.**
**Shartle Brothers Machine Co.**
**Waldron Corp., John**

### FILLERS

**Aluminum Flake Co.**
**American Colloid Co.**
**Amer. Cyanamid & Chem. Corp.**
**Amer. Resinous Chemicals Corp.**
**Johns-Manville Sales Corp.**
**W. H. Loomis Talc Corp.**
**Vanderbilt Co., R. T.**
**Witco Chemical Co.**

### FILTERS

**Cochrane Corp.**
**Hardinge Co., Inc.**
**Moore & White Co.**
**J. O. Ross Engrg. Corp.**
**Witco Chemical Co.**
**Worthington Pump & Machy. Corp.**

### FLOORING, GRATING & TREADS

**Hendrick Mfg. Co.**
**Klemp Co., W. F.**
**Norton Co.**
**Raybestos-Manhattan Inc. Manhattan Rubber Division**
**United States Rubber Co.**

### FORMING MACHINES

**Downingtown Mfg. Co.**
**Noble & Wood Machine Co.**
**Oliver United Filters**
**The Sandy Hill Iron & Brass Wks.**
**Shartle Brothers Machine Co.**
**South Wabash Engrg. Co.**

### FRICTION MATERIALS

**Johns-Manville Sales Corp.**

### FREENESS TESTERS

**Testing Machines, Inc.**

### GEARS

**Black-Clawson Company**
**De Laval Steam Turbine Co.**
**Downingtown Mfg. Co.**
**Farrel-Birmingham Co.**
**E. D. Jones & Sons Co.**
**Moore & White Co.**
**D. J. Murray Mfg. Co.**
**The Sandy Hill Iron & Brass Wks.**
**Shartle Brothers Machine Co.**
**Smith & Winchester Mfg. Co.**
**Valley Iron Works Co.**
**Waldron Corp., John**

### GRINDERS

**Carthage Machine Co.**
**Farrel-Birmingham Co.**
**Lobdell Car Wheel Co.**
**Montague Machine Co.**
**Norton Company**
**Samuel C. Rogers and Company**
**The Sandy Hill Iron & Brass Wks.**

### GRINDING WHEELS

**The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.**
**Norton Company**
**United States Rubber Co.**

### HEATING, VENTILATING AND AIR CONDITIONING

**The Appleton Machine Co.**
**Armstrong Machine Works**
**Cochrane Corp.**
**E. D. Jones & Sons Co.**
**General Electric Co.**
**Grinnell Company**
**Leeds & Northrup**
**D. J. Murray Mfg. Co.**
**Noble & Wood Machine Co.**
**Ross Engineering Corp., J. O.**
**Shartle Brothers Machine Co.**
**Stickle Steam Specialties Co.**
**Valley Iron Works Co.**
**Worthington Pump & Machy. Corp.**

### HOISTS

**Appleton Machine Co.**
**Dilts Machine Works**
**Rodney Hunt Machine Co.**
**Ingersoll-Rand Co.**
**E. D. Jones & Sons Co.**
**Reading Chain & Block Corp.**

### HOSE (Air, Water, Suction, etc.)

**The Cincinnati Rubber Mfg. Co.**
**Raybestos-Manhattan Inc. Manhattan Rubber Division**
**United States Rubber Co.**

# WHERE TO BUY

**HUMIDITY CONTROL**
Steamaire Company

**INSTRUMENTS, TESTING AND MEASURING**
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. B. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Wallace & Tiernan Instrument Co.

**INSULATION**
Johns-Manville Sales Corp.

**JOINTS**
Perfecting Service Company

**JORDAN FILLINGS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

**KNIVES**
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Valley Iron Works Co.

**KNOTTERS**
Fibre Making Processes, Inc.

**LABORATORY EQUIPMENT**
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works

**LAY BOYS**
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

**LINTER COTTON**
The Railway Supply & Mfg. Co.

**LUBRICANTS**
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

**LUBRICATORS**
Hills-McCanna Co.

**MATERIAL HANDLING**
Northwest Engrg. Co.
Reading Chain & Block Company

**MICROMETERS & CALIPERS**
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

**MOISTENING EQUIPMENT**
The Spray Engineering Co.
Steamaire Company

**MOISTURE CONTENT CONTROL**
Steamaire Company

**MOTORS AND GENERATORS**
Allis-Chalmers Mfg. Co.
Continental Electric Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

**NOZZLES**
Steamaire Company

**PACKING BOXES**
Johnson Corporation
Shartle Brothers Machine Co.

**PACKING**
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

**PAPER MACHINES**
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

**PAPER MACHINE SLICES**
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Valley Iron Works Co.

**PAPER MILL BUILDERS**
Merritt-Chapman & Scott Corp.
The Rust Engrg. Co.

**PAPER TUBE MACHINERY**
Theo. Adams
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

**PASTING MACHINES**
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

**PENSTOCKS, WELDED STEEL**
The Biggs Boiler Works Co.

**PERFORATED METAL**
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

**PIPE**
Black-Clawson Company
Crane Company
Deublin Company
Grinnell Company
Johns-Manville Sales Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Taylor Forge & Pipe Works
Walworth Company

**PLATERS**
Perkins & Son, Inc., B. F.

**PLATES**
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

**PLATE WORK (Steel & Alloy)**
The Biggs Boiler Works Co.

**PLUGS**
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

**PRESSURE VESSELS, STEEL AND ALLOY**
The Biggs Boiler Works Co.

**PRESSES**
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Fibre Making Processes, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John
Weber, Herman G.

**PULPERS**
Bauer Brothers Co.

**PULPS**
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

**PULPSTONES**
Norton Company

**PUMPS**
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Buffalo Pumps, Inc.

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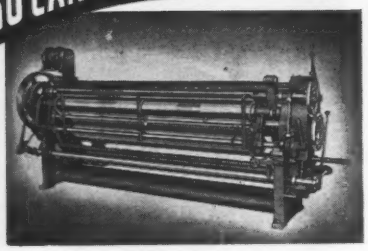

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**PRINTING PRESSES**
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**WINDERS**
Toilet, Towels, Crepe, Jumbo Roll.

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APPLETON WOOLEN MILLS
APPLETON-WISCONSIN

PAPER — TEST — INSTRUMENTS
Smoothness-tester; Stiffness-tester; Permeability-testers
Strain-meter Quadrant-Paper-Scales
A.v.d.KORPUT. BAARN (Holland)
Agencies still open in some territories.

K-121-B DEINKING — DECOLORIZING and COOKING PROCESSES K-C-2
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12500 Berea Road Cleveland, Ohio

STEAM TURBINES
HELICAL GEARS
WORM GEARS
CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS
PROPELLER PUMPS
CLOGLESS PUMPS
MIXED-FLOW PUMPS
DE LAVAL-IMO OIL PUMPS
DE LAVAL STEAM TURBINE CO.
TRENTON 2, NEW JERSEY


## WHERE TO BUY

Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hardinge Co., Inc.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Morris Machine Works
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Steamaire Company
Warren Steam Pump Company
Worthington Pump & Mchy. Corp.

**RAG CUTTERS**
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

**RECOVERY SYSTEMS**
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp., J. O.
Valley Iron Works Co.

**REELS**
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

**REFINERS**
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

**REGULATORS**
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

**RESINS**
Amer. Cyanamid & Chemical Corp.
Amer. Resinous Chemicals Corp.
Monsanto Chemical Co.
The Resinous Prod. & Chem. Co.

**ROLLS**
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. & Machine Co.
Pusey & Jones Corp.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

**ROLL COVERS**
The Cincinnati Rubber Mfg. Co.
Stowe-Woodward, Inc.

**ROLL STANDS**
Cameron Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

**ROOFING MATERIALS**
Johns-Manville Sales Corp.

**ROTARY BOILERS**
Biggs Boiler Works

**SATURATING MACHINES**
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

**SAVEALLS**
Bulkley, Dunton Pulp Co., Inc.

**SCALES**
Merrick Scale Mfg. Co.

**SCREEN PLATES**
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

**SCREENS**
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

**SHEET MACHINES**
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

**SHOWER PIPES**
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

**SHREDDERS**
Bauer Brothers Co.
Carthage Machine Co.

**SIZING**
Amer. Cyanamid & Chemical Co.
Amer. Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Flintkote Company
Monsanto Chemical Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Socony-Vacuum Co.
Stein, Hall & Co., Inc.

**SLIME CONTROL**
Falls Chemical Products Co.
Magnus Chemical Co.
Mallinckrodt Chemical Wks.

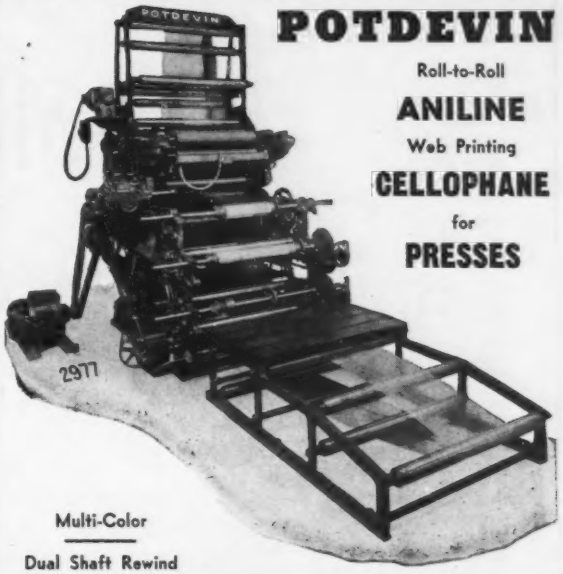
**SLITTERS**
Theo. Adams
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John

**SMOKE STACKS**
The Biggs Boiler Works Co.

**SOLENOID VALVES**
Steamaire Company

# WHERE TO BUY

**SPRAYING EQUIPMENT**
The Spray Engineering Co.
Steamaire Company
**STAINLESS STEEL**
Anti-Corrosive Metal Products Co., Inc.
**STARCH**
Amer. Cyanamid & Chemical Corp.
Clinton Industries, Inc.
National Starch Products, Inc.
Stein, Hall & Co., Inc.
**STATIC ELIMINATORS**
Steamaire Company
**STEAM SPECIALTIES**
Babcock & Wilcox Co.
Cochrane Corp.
Johnson Corp.
Perfecting Service Company
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.
**STEEL TANKS**
The Biggs Boiler Wks. Co.
**STRAPPING & STRAPPING MACHINES**
Acme Steel Company
The Stanley Works
**STUFF CHESTS**
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
**SUCTION BOXES**
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Westinghouse Electric Corp.
**SULPHUR**
Amer. Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company
**SULPHUR BURNERS**
Valley Iron Works Co.
**SULPHUR DIOXIDE**
Ansul Chemical Company
**SUPERCALENDERS**
B. F. Perkins & Son, Inc.
**TALC**
Amer. Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
**TANKS**
Cochrane Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Waldron Corp., John
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
**THICKENERS, DECKERS AND SAVEALLS**
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
**TITANIUM**
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company
**TOOLS**
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company
**TRUCKS**
Automatic Transportation Co.
**TRAPS**
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Grinnell Company.
Johnson Corporation
Shartle Bros. Mch. Co.
**TUBS**
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.
**TURBINES**
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machy. Corp.
**USED EQUIPMENT**
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Ross Paper Machinery Co.
Shartle Brothers Machine Co.
**VALVES**
The Bristol Company
Cochrane Corp.
Crane Company
Dilts Machine Works
Fibre Making Processes, Inc.
The Foxboro Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
Wilham Powell Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company
**VALVES, LUBRICATED PLUG**
American Car & Foundry Co.
**VATS & VAT PARTS**
Union Machine Co.
Union Screen Plate Co.
**WASHERS**
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
**WATER CONDITIONING**
Cochrane Corp.
The Permutit Company
**WATER DISPERSIONS**
American Anode, Inc.
**WAXING MACHINERY**
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.
**WELDING EQUIPMENT**
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.
**WET MACHINES**
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
**WINDERS AND REWINDERS**
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Waldron Corp., John
**WIRES**
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co., Inc
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.
**WOOD PEELERS**
Nekoosa Edv. & Mch. Wks., Inc.
**WOOD SPLITTERS**
Carthage Machine Co.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# ALPHABETICAL INDEX TO ADVERTISERS IN THIS ISSUE


**A**

Allis Chalmers Mfg. Co. ..... 3
American Anode, Inc. ..... 37
American Colloid Company ... 79
American Lumber & Treating Co. ..... 63
Amer. Paper Machy. & Engrg. Wks. ..... 79
Appleton Wire Works ..... 49
Appleton Woolen Mills ..... 84

**B**

Babcock & Wilcox Company 10 & 11
Bauer Brothers Company .... 32
Bird Machine Company ..... 21
Black Clawson Company .... 73
Blaw-Knox Company ..... 65
Bowsher, N. P., Company .... 79
Bristol Company ..... 12
Butterworth, H. W., & Sons Co. 63

**C**

Calco Chemical Div., American Cynamid Co. ..... 13
Cambridge Instrument Co. .... 66
Cameron Machine Company .. 16
Clark, Frederick C. ..... 71
Classified Advertising ..... 72
Cochrane Corporation ..... 45
Crane Company ..... 7

**D**

Davis, Frank H., Company... 76
DeLaval Steam Turbine Co... 84
deVries Company, E. ..... 40
Dietz Machine Works ..... 69
Dilts Machine Works ..... 73
Downingtown Mfg. Company .. 2
Draper Brothers Co. ..... 44
duPont de Nemours & Co., Electro-chemical Dept. ..... 47
duPont de Nemours & Co., Grasselli Dept. ..... 27

**F**

Farrel Birmingham Co. ..... 31
Ferguson, Hardy S., & Co. .. 71
Fibre Making Processes Inc. .. 81
Foster Wheeler Corp. ..... 46

**G**

General Electric Company ..8 & 9
General Latex & Chem. Co. .. 14
Gibbs-Brower Co. Inc. ..... 76
Gottesman & Co. .....Front Cover
Greene Tweed & Co. ..... 67

**H**

Hall, Thomas W., Company .. 76
Hardy, George F. ..... 71
Harrington & King Perf. Co... 69
Hooker Electrochemical Co. .. 29
Hubbs Houses ..... 23

**I**

Ingersoll Rand Company ..... 82
International Wire Wks. .... 79

**J**

Jeffrey Mfg. Company ..... 50
Johnson, Alvin H., & Co. .... 71

**K**

Kalamazoo Tank & Silo Co. .. 83
Kelco Company ..... 17
Kinsley Chemical Co. ..... 84
Knox Woolen Company ..... 71

**L**

LaBoiteaux Co., Inc., The ... 15
Langston, Samuel M., Company 69
Lindsay Wire Weaving Co. .. 65
Lobdell Company ..... 67
Lockport Felt Company ..... 69
Loomis Talc Corporation ..... 71

**M**

Main, Charles T., Inc. ..... 71
Mayer Machine Company .... 71
McPherson Company, The ... 69
Merrick Scale Mfg. Co. ..... 71
Merritt Chapman & Scott Corp. 71
Michigan Steel Casting Co. .. 71
Moore & White Company .... 79
Murray, D. J. Mfg. Company.. 80
Murray & Tregurtha Inc. .... 4

**N**

National Oil Products Co. ... 33
Northern Engr. & Mch. Co... 71

**O**

Oakite Products Inc. ..... 80

**P**

Paper Converting Mach. Co... 84
Permutit Company ..... 41
Potdevin Machine Company .. 85
Price & Pierce Ltd. ..... 82
Pusey & Jones Corporation .. 18

**R**

Raymond, C. P., Service ..... 72
Resinous Prod. & Chemical Co. 6
Ross, J. J., Company ..... 74
Ross Paper Machy. Co. ..... 75
Rust Engineering Co. ..... 71

**S**

Seaboard Air Line Ry. ..... 69
Shartle Brothers Machine Co... 73
Shelley, John G. ..... 79
Simonds Saw & Steel Co. ... 35
Sinclair Refining Co. ..... 25
Smith & Winchester Mfg. Co. 81
Solvay Sales Corp. ..... 34
Spain, H. M., & Company ... 83
Spray Engrg. Company ..... 5
Stauffer Chemical Company .. 83
St. Regis Paper Co. ..... 28
Sutherland Refiner Corp. ..... 39

**T**

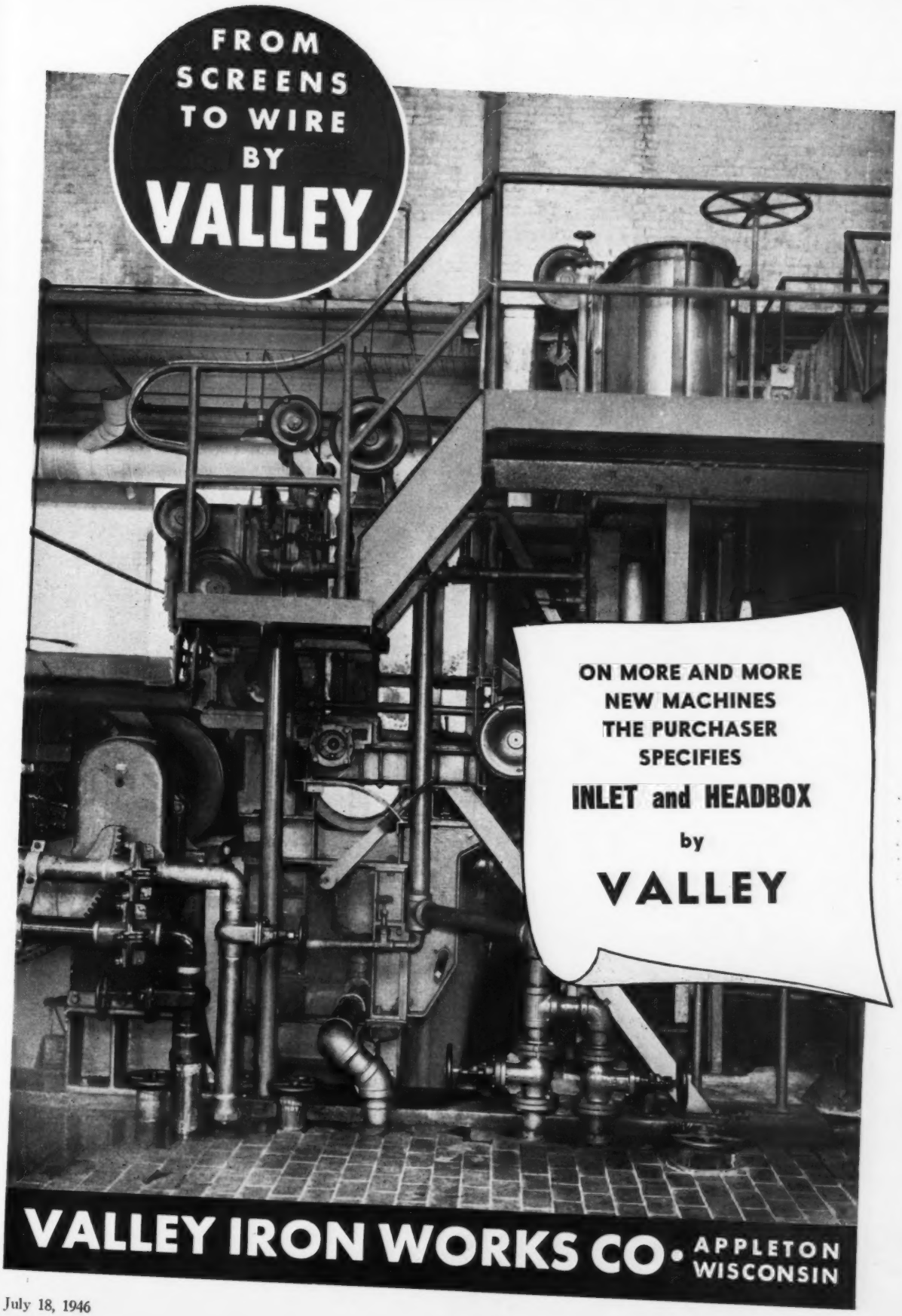
Tidewater Assoc. Oil Co. .... 43
Timken Roller Bearing Co. Back Cover

**V**

Valley Iron Works Co. ..... 87
Van der Korput, A. ..... 84

**W**

Walker, Goulard, Plehn Co. .. 79
Waterbury. H., & Sons Co. .. 79
West Va. Pulp & Paper Co. .. 65
Witco Chemical Co. ..... 86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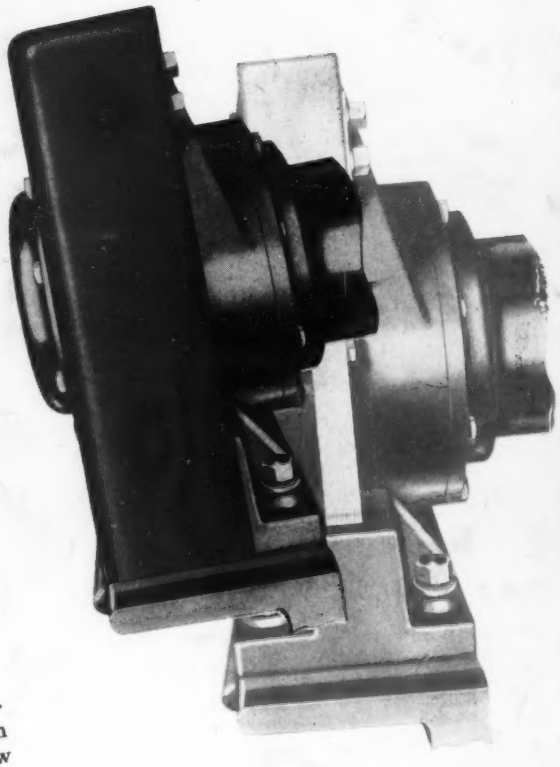

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